

CITIZEN

Service Manual

DOT MATRIX PRINTER

MODEL CBM-710/720

Rev.1.00 Newly issued on Mar, 1989

Japan CBM Corporation

CONTENTS

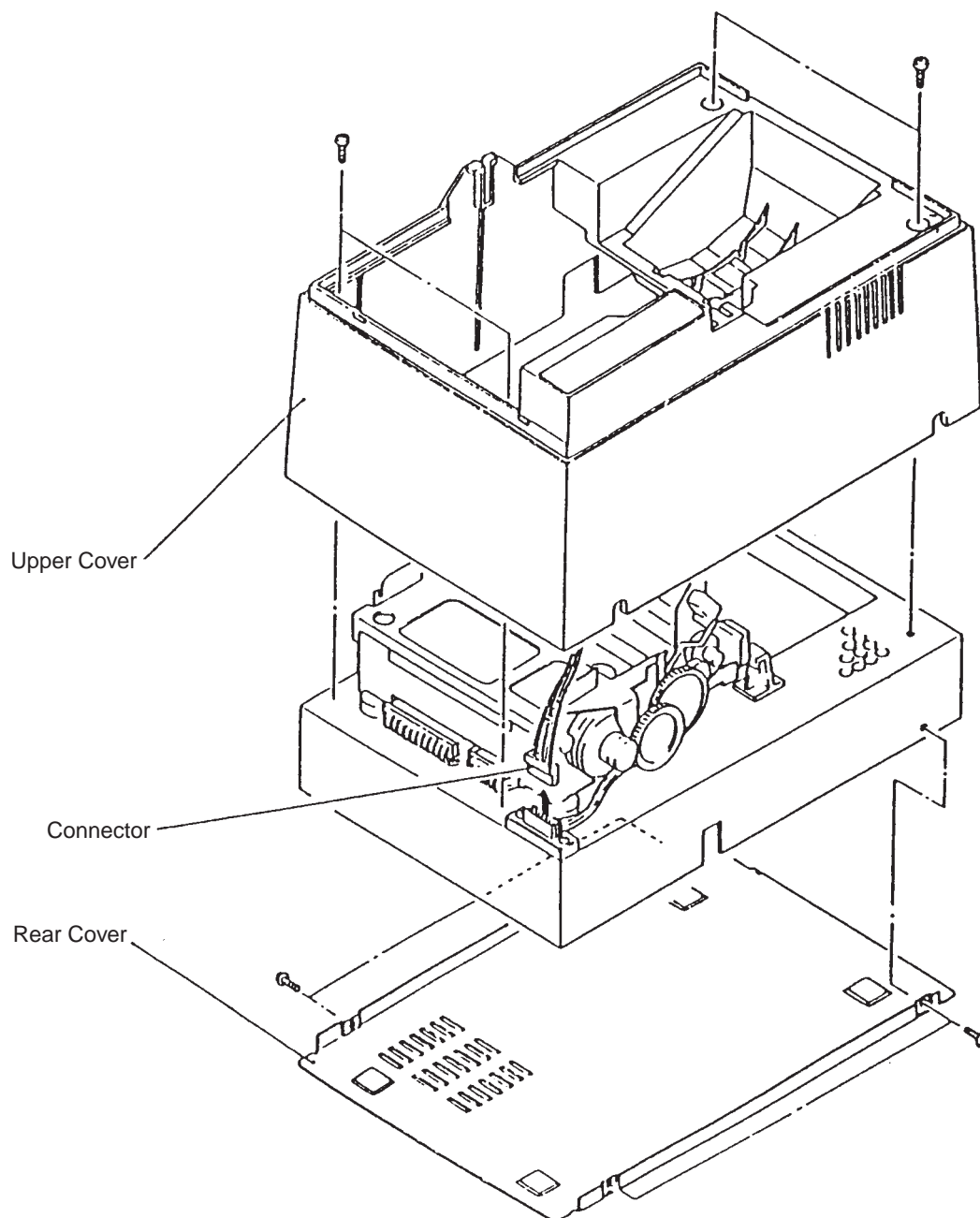
Chapter 1. Printer Disassembly and Assembly	1
1 How to Remove Upper Cover and Rear Cover	2
2 How to Remove The Printer Mechanism	3
3 How to Remove the Control Board	3
4 How to Remove the Power Board and AC power Unit	4
5 How to Remove the Auto Cutter (CBM-720 only)	5
6 How to Remove the Operation Panel and PE Sensor	5
Chapter 2. Circuit Description	6
1 Outline	7
2 CPU Peripheral Circuit	8
3 Printer Control Circuit	10
4 Cutter Control Circuit	11
5 Interface and Operation Panel	12
6 Paper End Sensor Circuit	13
7 Parallel Interface Circuit	14
8 Serial Interface Circuit	16
9 RS422A interface Circuit	18
10 Power Supply Circuit	19
Chapter 3. Auto Cutter	20
1 Maintenance and Handling	21
2 Mechanism and Principle of Operation	22
3 Repairing and Troubleshooting	24
4 Disassembly and Assembly	26
Chapter 4. Circuit Diagram	28
1 Power Supply Circuit	29
2 Noise Filter Circuit	30
3 Operation Panel Circuit	30
4 Paper End Sensor Circuit	30
5 OP Junction Circuit	31
6 Parallel	32
7 RS232C	33
8 PS422A	34
Chapter 5. Parts List	35
1 Exploded View	36
2 Block Diagram	41
3 Power Supply Unit	43
4 Noise Filter Unit	45
5 Control Board Unit: RS232C	47
6 Control Board Unit: Parallel	51
7 Control Board Unit: RS422A	55
8 OP Panel/PE Detector/OP Junction Unit	59
9 Auto Cutter	63
10 Winder	67

Chapter 1

Printer Disassembly and Assembly

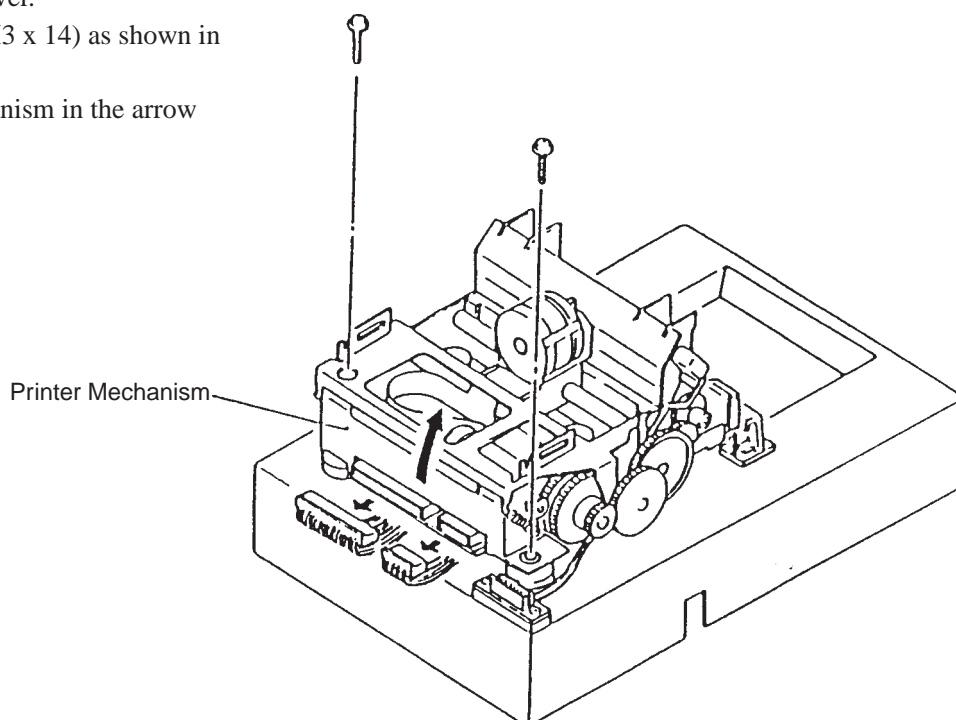
1. How to the Upper Cover and Rear Cover

- 1) Unfasten 4 screws (M3 x 6) as shown in the figure and lift the upper cover upward, while disconnecting the connector.
- 2) Unfasten 4 screws (M3 x 6) at both sides and remove the rear cover.



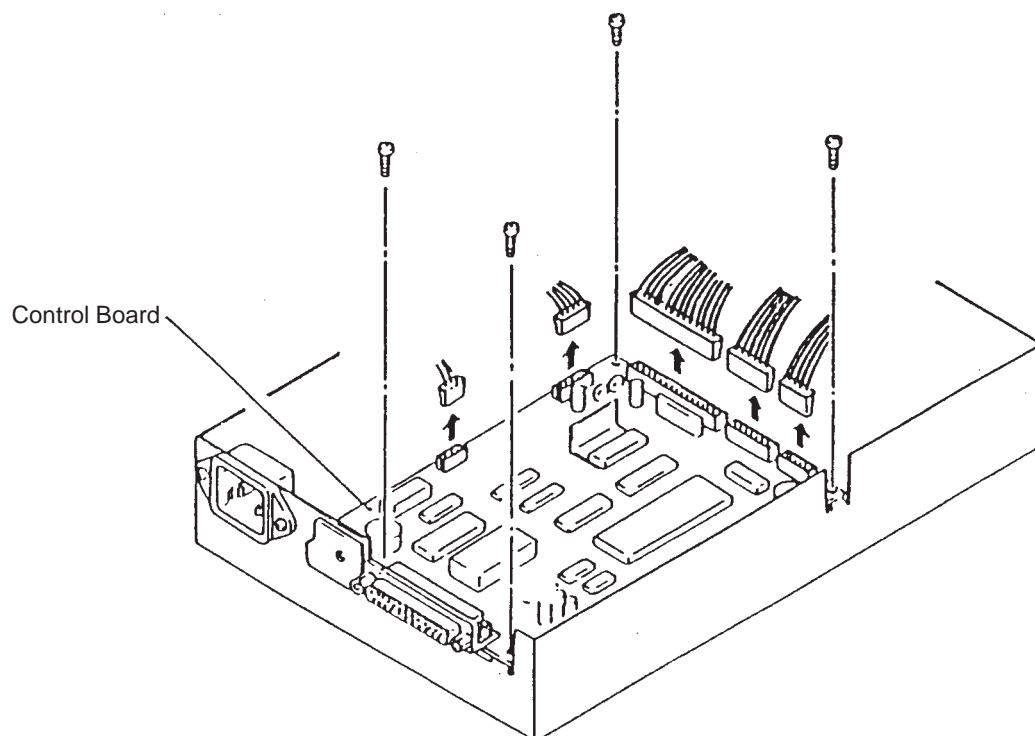
2. How to Remove the Printer Mechanism

- Remove the upper cover.
- Unfasten 2 screws (M3 x 14) as shown in the figure.
- Lift the printer mechanism in the arrow position for removal.



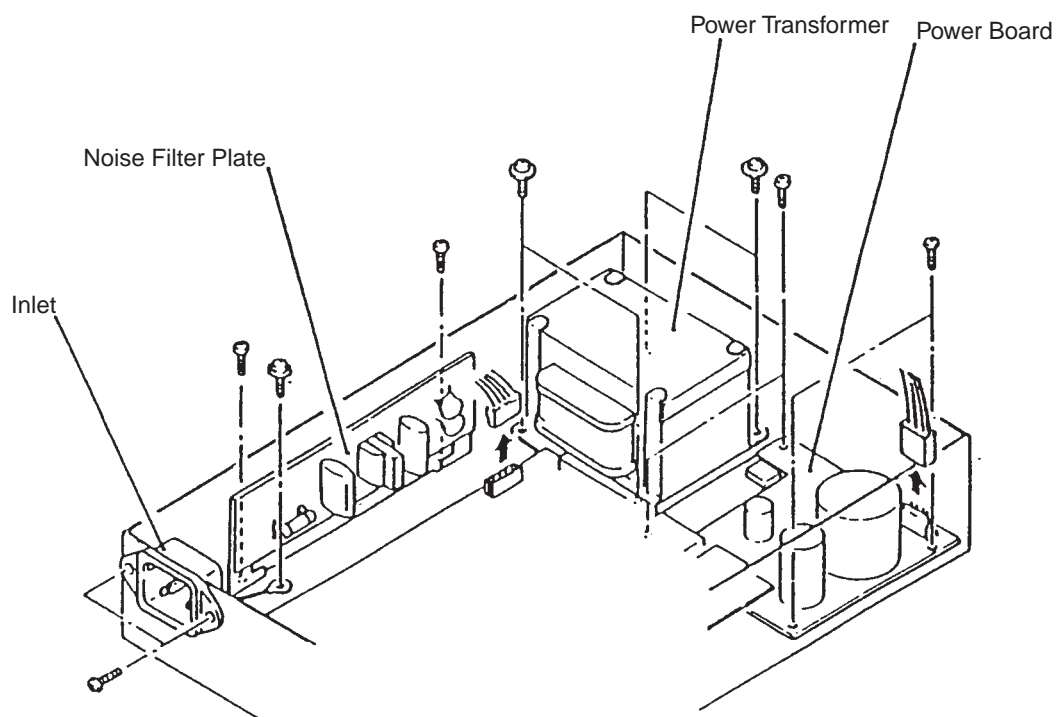
3. How to Remove the Control Board

- Remove the rear cover.
- Disconnect each connector.
- Unfasten 4 pieces of board mounting screws for removal of the control board.



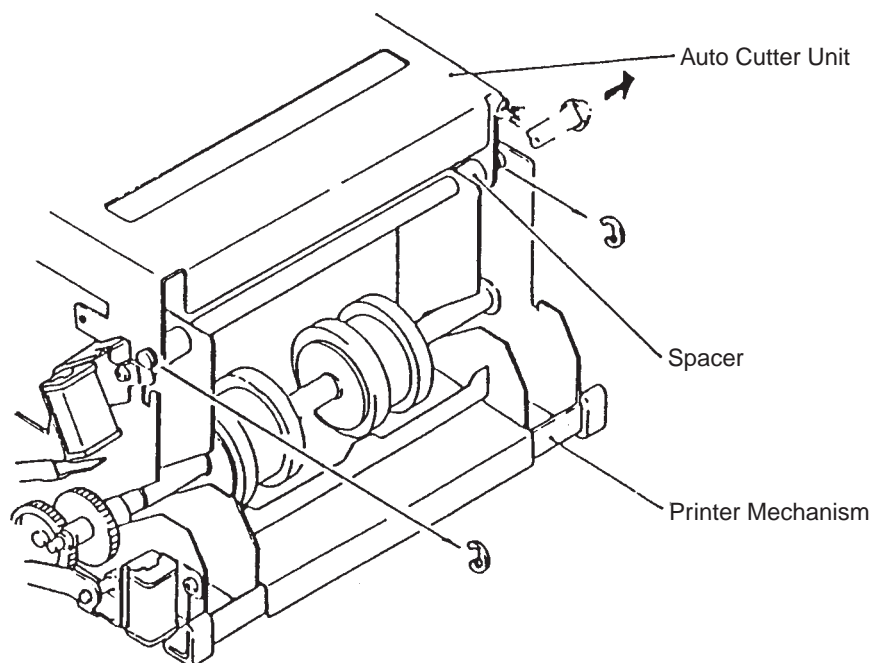
4. How to Remove the Power Board and AC Power Unit

- 1) How to Remove the Power Board
 - Disconnect 2 connectors.
 - Unfasten 2 screws (M3 x 8) and 2 tapping screws (M3 x 8).
 - Remove the board, paying attention to the lead wire.
- 2) How to Remove the AC Power Unit
 - Unfasten 2 inlet set screws (M3 x 10) and an earth wire mounting screw (M4 x 6).
 - Unfasten 2 noise filter plate mounting screws (M3 x 6).
 - Unfasten 4 power transformer mounting screws (M4 x 6).
 - Disconnect the connector at the secondary side of the power transformer and take away the entire unit.



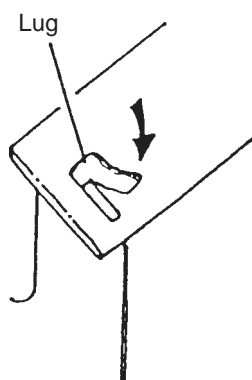
5. How to Remove the Auto Cutter Unit (720)

- Remove the printer mechanism from the main body.
- Remove 2 E3's as shown in the figure.
- Pull out the shaft in the arrow direction for removal of the auto cutter unit. (Note that 2 spacers come off at the same time).



6. How to Remove the Operation Panel Board and PE Sensor Board

- Remove the upper cover and unfasten 2 tapping screws for removal of the operation panel board.
- Remove the printer mechanism and unfasten a screw for removal of the PE sensor board assembled with the PE sensor holder. To remove the board only, remove the lug of the PE sensor holder.



Chapter 2

Circuit Description

1. Outline

A block diagram of this printer is shown in Fig. 1-1. It consists of the control circuit centered around CPU, ROM, RAM and peripheral circuits, interface circuit for interfacing with each host computer, operator panel circuit for operating switch input and LED display, printer mechanism, auto cutter, and power circuit for furnishing power supply to each part.

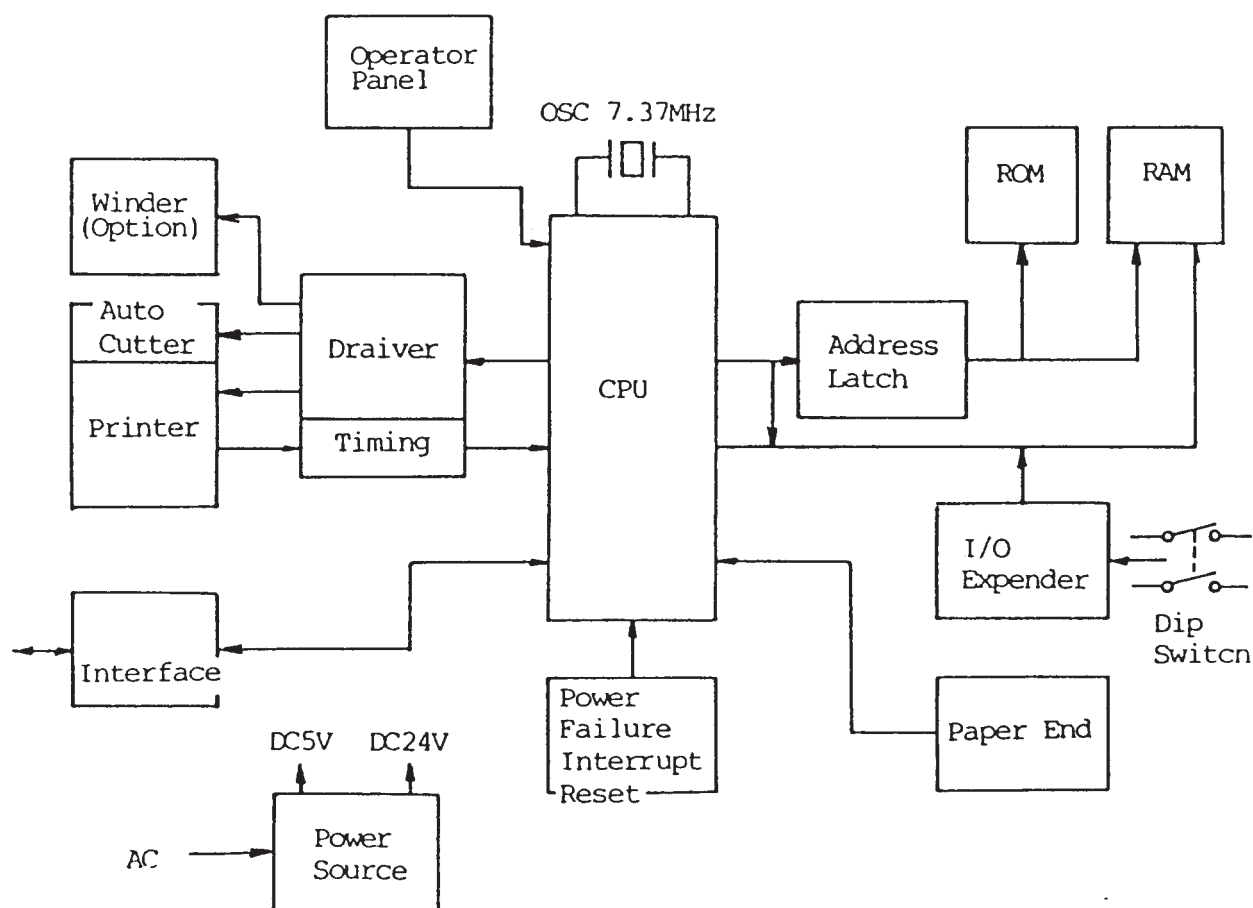


Fig. 1-1 Block Diagram

2. CPU Peripheral Circuits

1) CPU and ROM/RAM

The CPU M50734SP has a external memory type. Lower 8-bit address is fetched via the A0/D0 bus line by the 8-bit latch LS373. The 128-KB ROM and 64-KB RAM are used for performing the backup operation for power failure by the super capacitor. The ceramic oscillator is used as CPU clock and transmits 7.37 MHz.

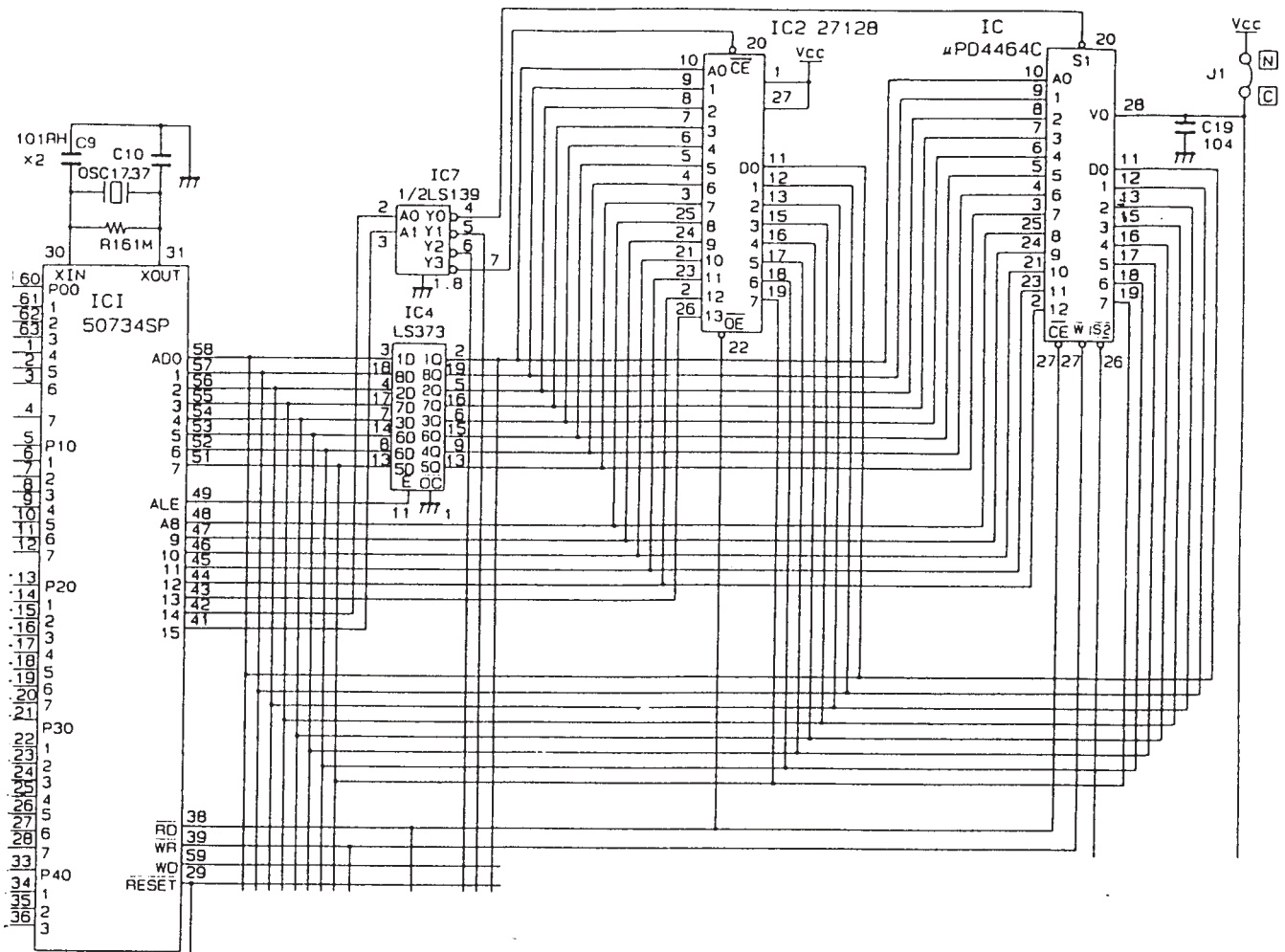


Fig. 2-1 CPU and ROM/RAM Circuit

2) Initial Resetting and Power Failure Interrupt Circuit

The IC12 is an IC for generating the power failure interrupt signal and reset signal. When the power supply voltage decreased due to power failure, etc. this IC performs the voltage inspection and stores all data in the CPU buffer into RAM while printing.

As can be seen in the timing chart, it detects that Vcc decreased up to about 4.5 V for power failure and generates the power failure interrupt signal and sends it to CPU. Upon receipt of the signal, CPU transmits the data in its buffer to RAM. This processing is done within about 200 μ s. After about 1 ms, the reset signal is generated at IC12 and given to CPU, etc., causing all circuits to reset for prevention of explosive running. When the power supply is turned on, reset is released after Vcc increases up to 4.5 V or more and then initial setting is performed. The WD terminal of CPU is called "Watch Dog", which is the output terminal used for explosive running.

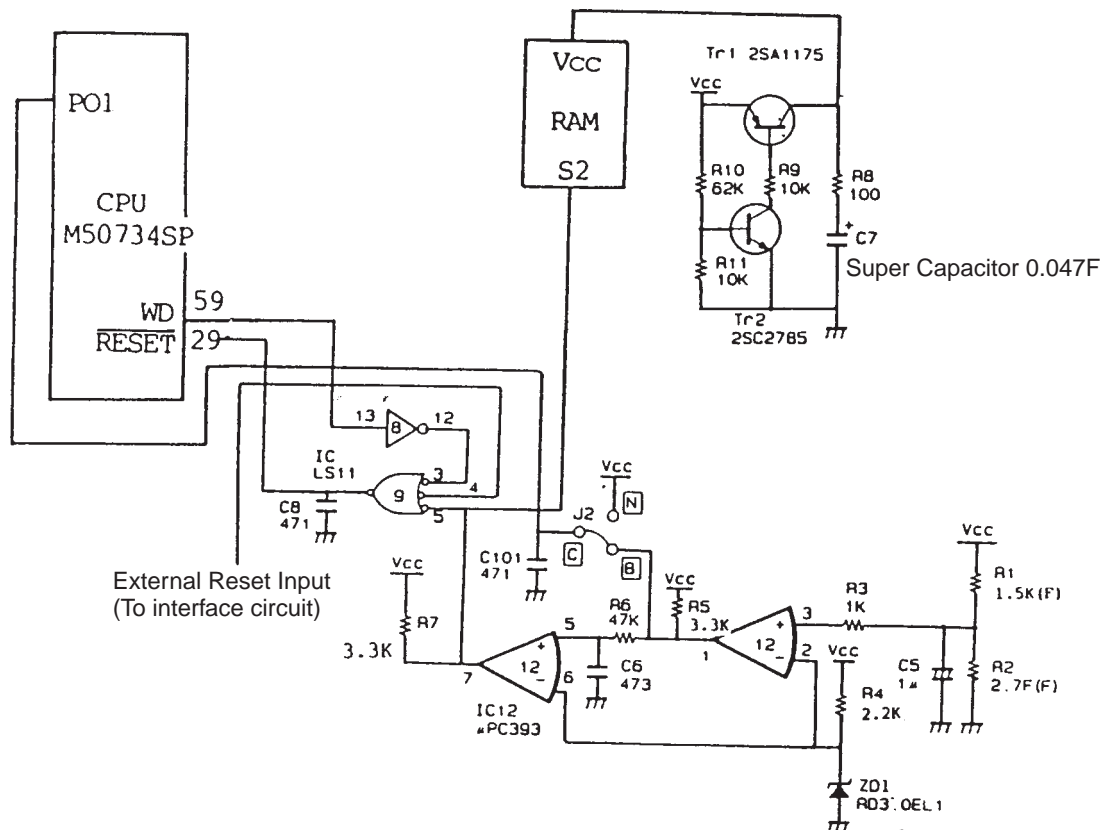


Fig. 2-2 Power Failure Interrupt Circuit and Initial Resetting

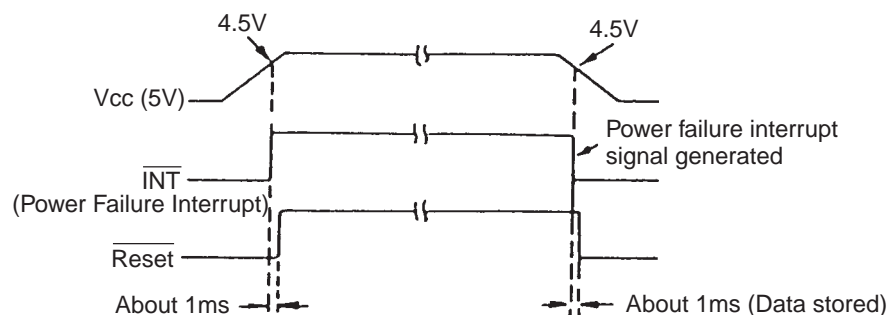


Fig. 2-3 Timing Chart

3. Printer Control Circuit

- 1) When L is output to the CPU port P31, the motor rotates and a timing pulse appears at the DP terminal of CN5.
- 2) After rotation of the motor, printing starts in timing at which the port P34 is changed into L from H by the home pulse of the printer.
- 3) In 9 ports of CPU output ports P20 to 27 and P30, the L pulse is output to the necessary port. Electricity is applied once to the DOT solenoid for two timing pulses and characters are printed.
- 4) The paper is fed when the CPU port P33 becomes L in the specified timing.
- 5) Color is changed when the CPU port P32 becomes L in the specified timing.

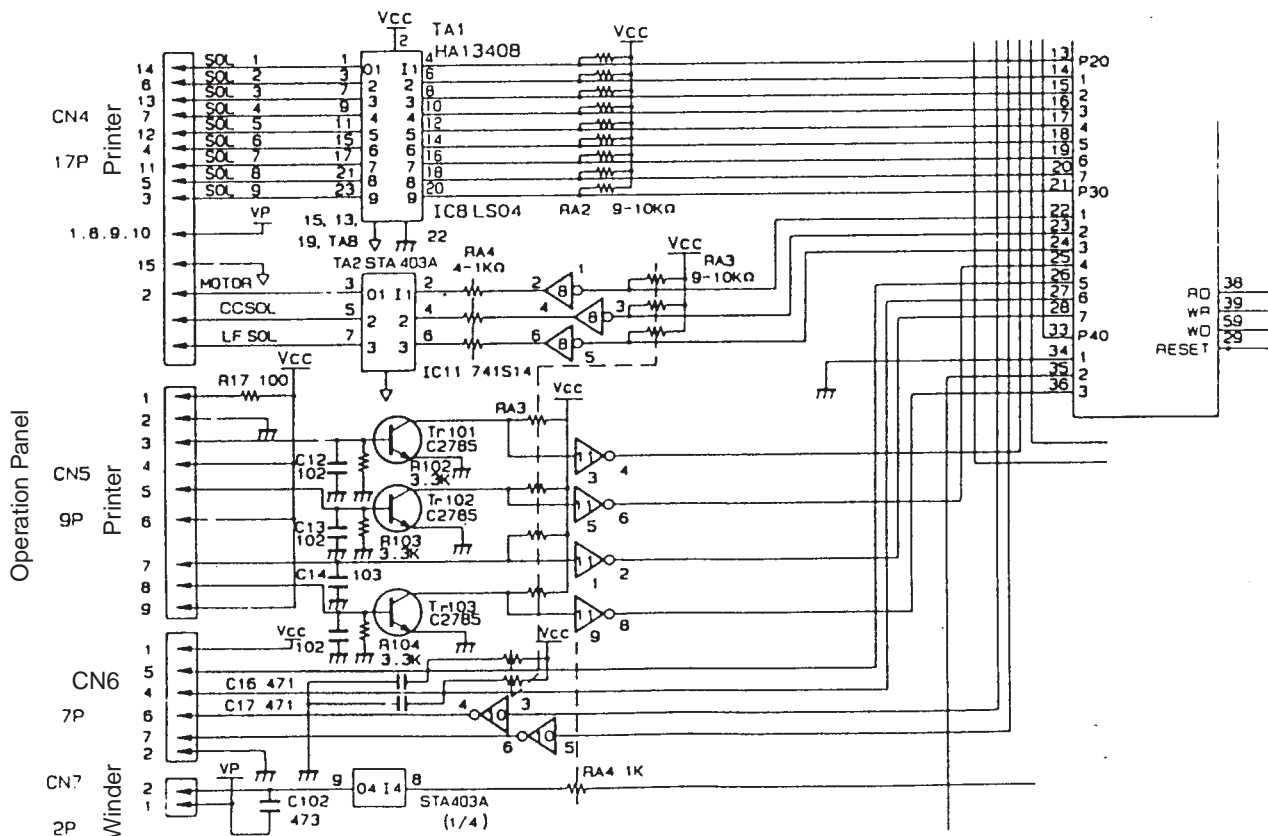


Fig. 3-1. Printer Control Circuit

4. Cutter Control Circuit

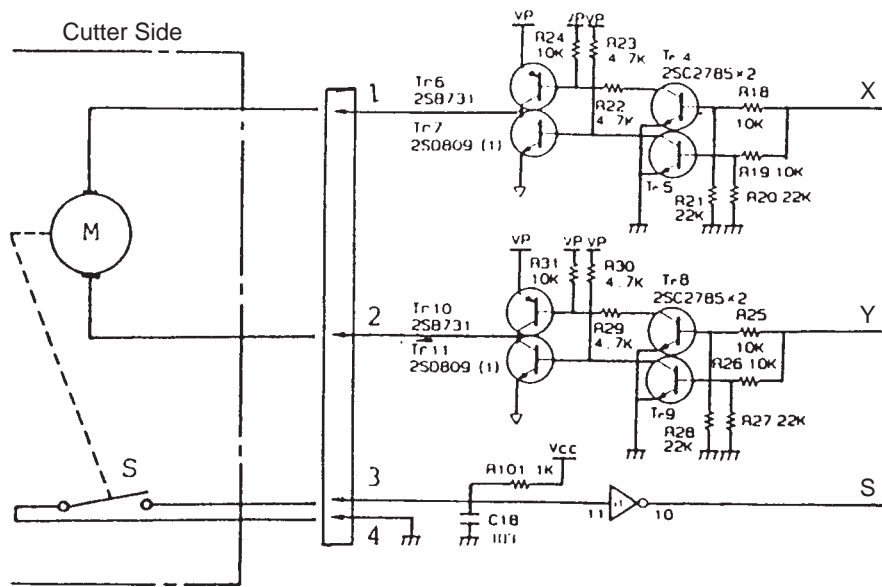


Fig. 4-1 Cutter Control Circuit

The cutter control circuit is as shown in Fig. 4-1. In the cutter side, M indicates the motor and S the home switch. The motor can make forward and reverse rotation by controlling X and Y inputs of the control circuit as shown in the table below.

	Normal	Reverse	Stop	Stop
X	H	L	L	H
Y	L	H	L	H

The timing chart is provided in Fig. 4-2. The rising of S when the motor makes forward rotation is the home position, where the motor stops. For full cut, the blade returns to the home position with only forward rotation of the motor after turn-around. For partial cut, on the way of cut after forward rotation of the motor, make reverse rotation to return the blade. Then stop the blade at the home position by making forward rotation again.

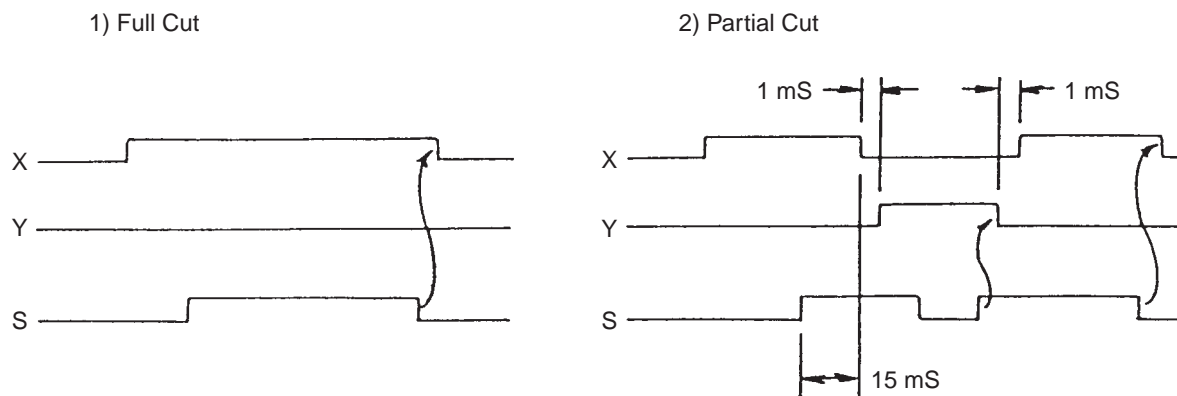


Fig. 4-2 Timing Chart

5. Interface with Operation Panel

As shown in Fig. 5-1, the operation panel circuit has the on-line switch and line feed switch. Each switch is connected to CPU input ports and each LED is connected through the driver to CPU output ports.

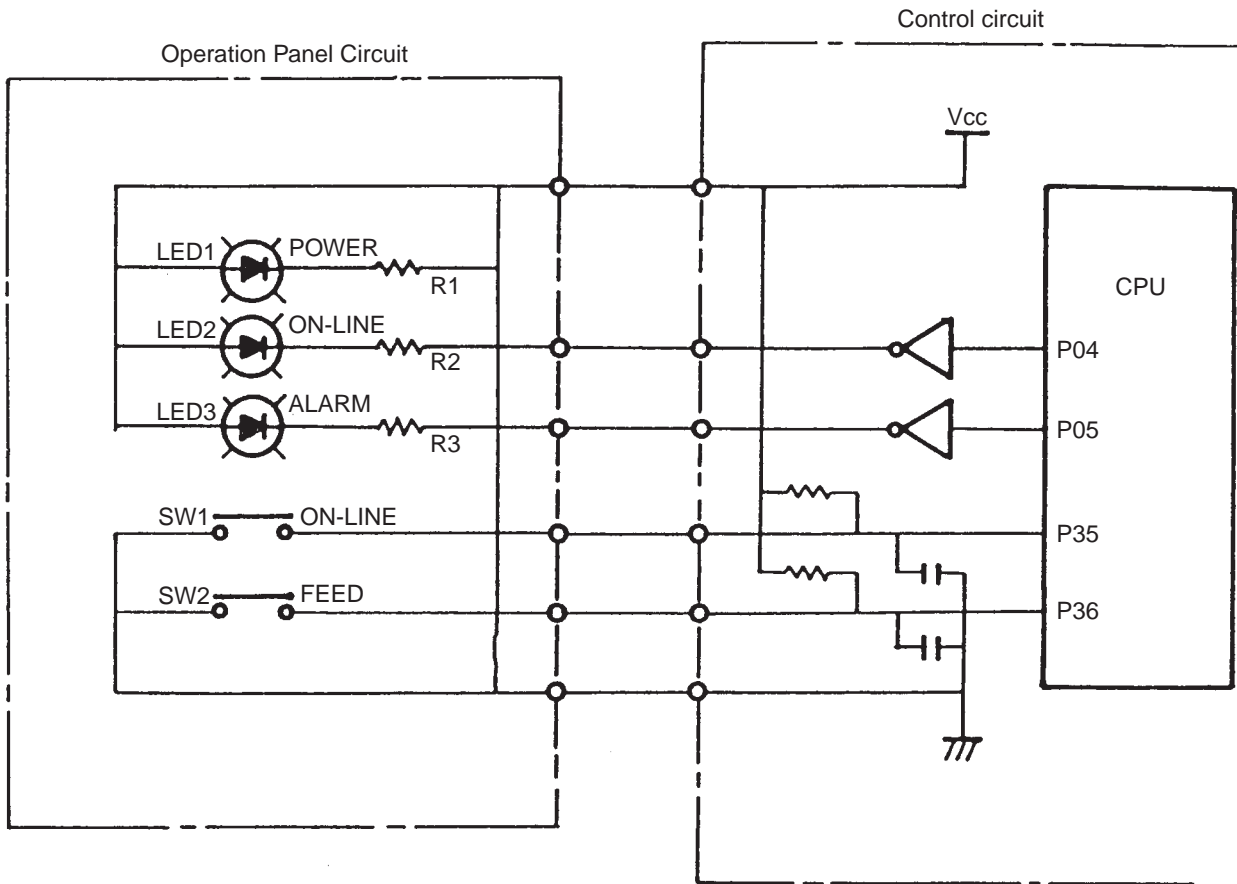


Fig. 5-1 Operation Panel Circuit

6. Paper End Sensor Circuit

Fig. 6-1 shows the paper end sensor circuit. The reflection type photo-interrupter is used as a sensor. When some paper is still left, the light reflected by paper strikes upon the photo-transistor; thus, the collector of the photo-transistor is L. When paper becomes short, no light is reflected, causing the collector to go H. As a result, the CPU input port P40 becomes H, going into the paper end state.

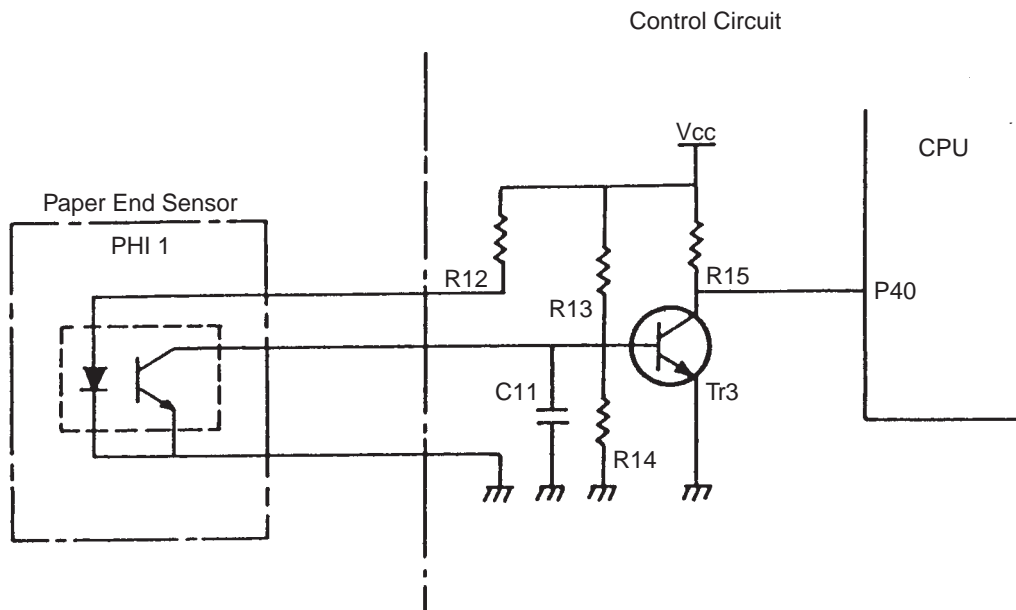


Fig. 6-1 Paper End Sensor Circuit

7. Parallel Interface Circuit

This circuit conforms to the standard interface. Description will be made for each signal of interface connector as follows. Fig. 7-1 shows the data input and print timing chart and Fig. 7-2 the parallel interface circuit diagram.

DATA (D1~D8) : 8-bit parallel signal (Positive logic)

$\overline{\text{STB}}$: Strobe signal for reading 8-bit data (Negative logic)

$\overline{\text{RESET}}$: Signal for resetting the printer (Negative logic)

$\overline{\text{ACK}}$: Data request signal to be output at the end of BUSY signal (Negative logic)

BUSY : Signal for indicating if the printer is in the busy state; it goes into the busy state for H. (Positive logic)

$\overline{\text{FAULT}}$: Signal to be output when the printer is in the abnormal state; at this time all control circuits in the printer stop. (Negative logic)

PE : Signal to be output when the print paper becomes short (Positive logic)

FG : Frame ground

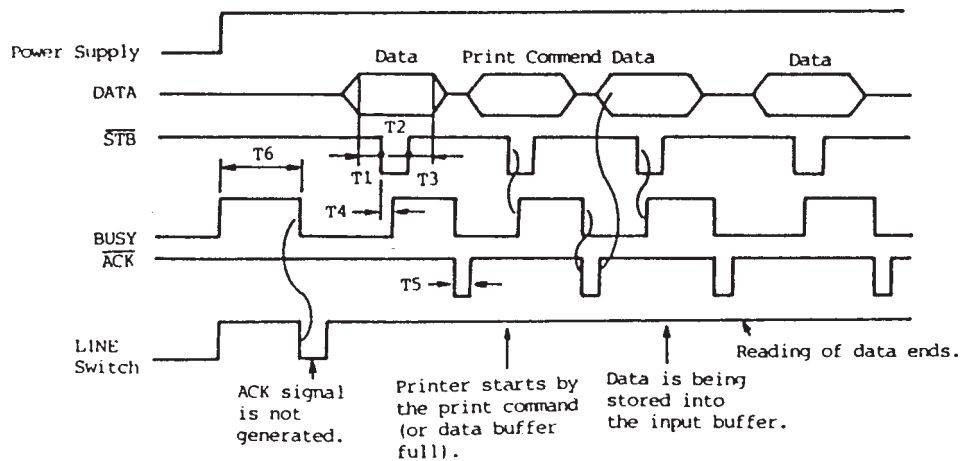


Fig. 7-1 Data Input and Print Timing Chart

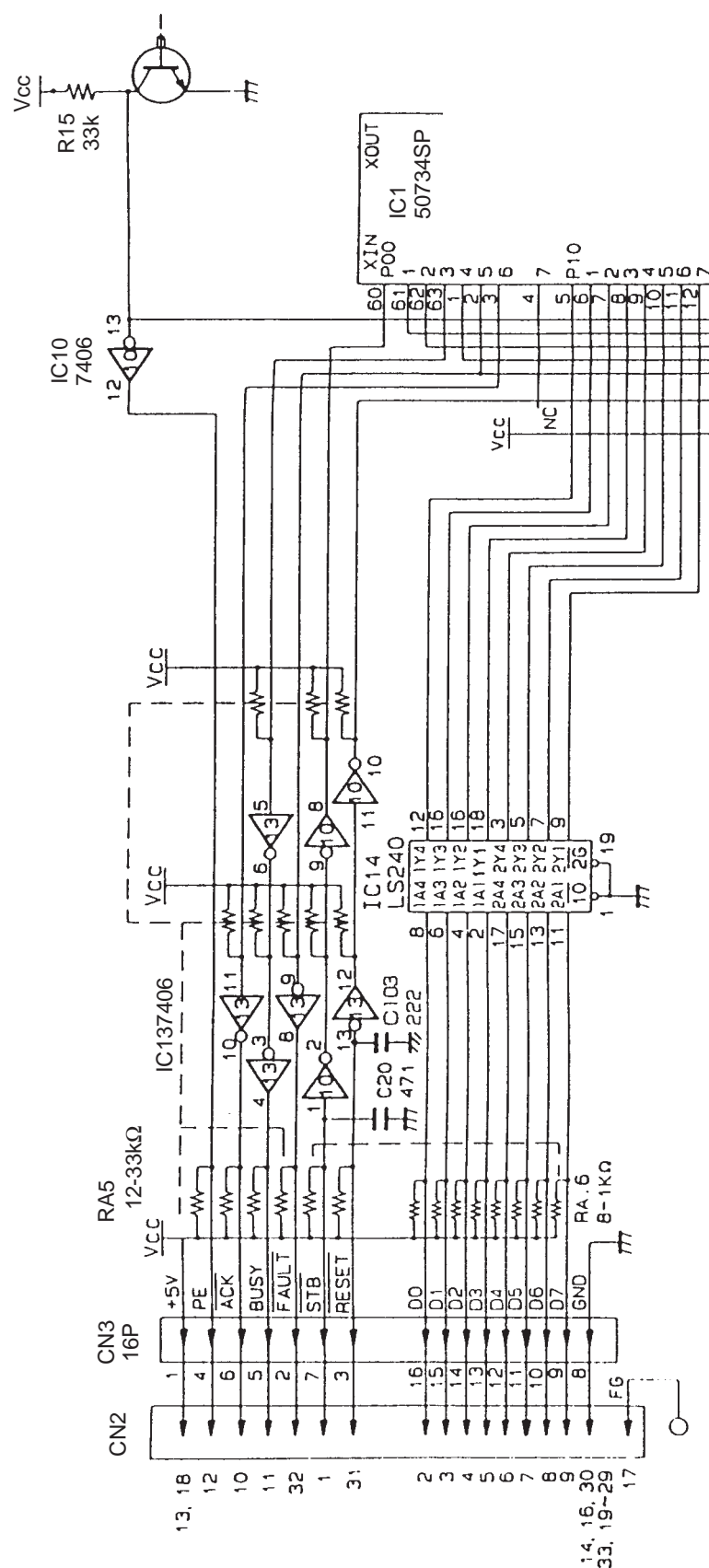


Fig. 7-2. Parallel Interface Circuit

8. Serial Interface Circuit

As the serial interface specification, RS-232C and 20 mA current loop can be switched by the slide switch. It can be switched by the user although fixed by setting at delivery time.

- 1) RS-232C
By using MAX232C for data receiving (RD), data transmitting and BUSY (DTR), data is transmitted and received at level of RS-232C. The baud rates of 110 to 9600 bps can be selected by switching the DIP switch.
- 2) 20 mA Current Loop
The photo coupler is used for transmitting and receiving. The photo coupler LED is used for receiving data and the photo transistor for transmitting data.
- 3) DIP Switch Reading
The baud rate, word length, parity check, parity condition are set by the DTP switch.
- 4) Positive/Negative Power Supply for RS-232C
 ± 12 V power supply is required for obtaining RS-232C voltage level. In this printer, however, as IC MAX232C for interface is used, ± 12 V is generated at the power circuit built in IC. Thus, no other power supply is required.

The serial interface circuit diagram is shown in Fig. 8-1.

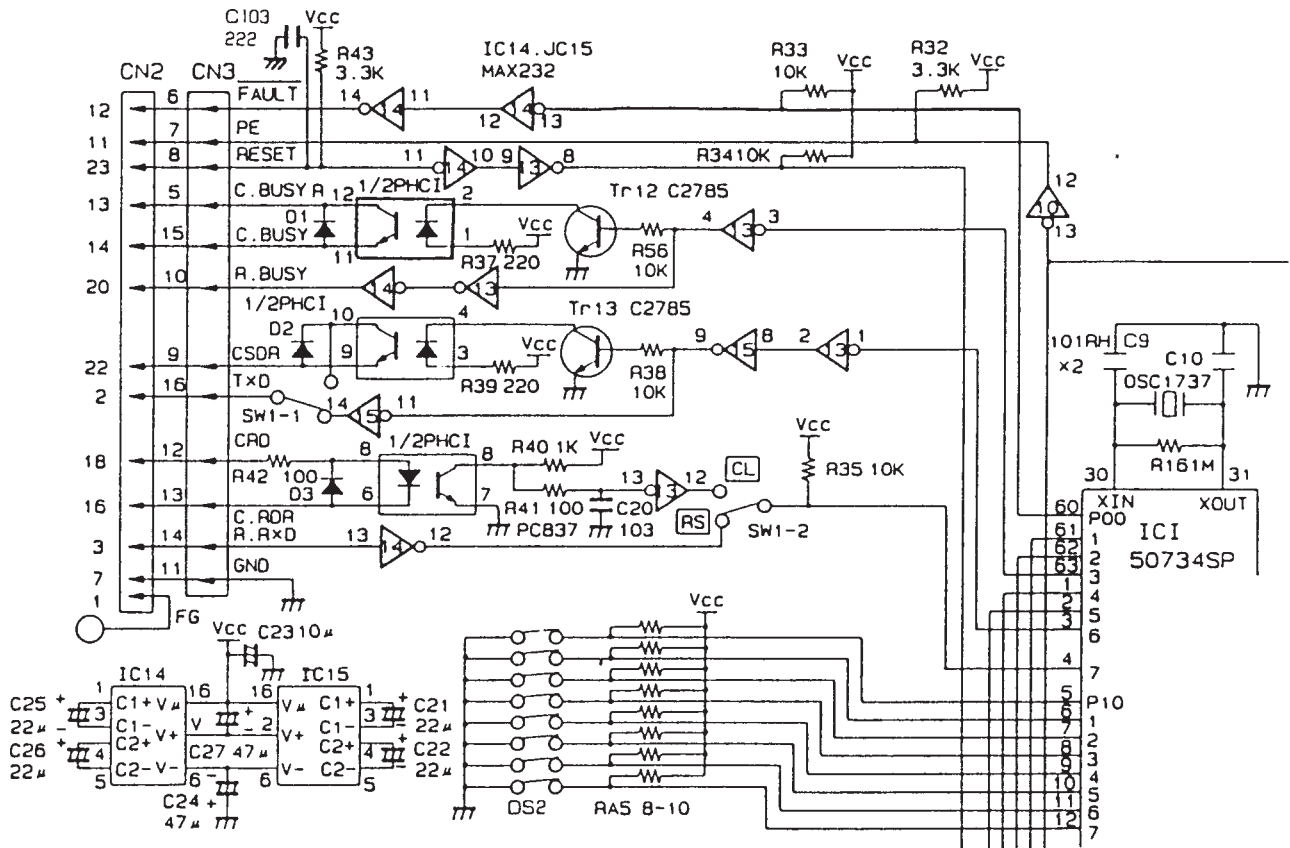


Fig. 8-1 Serial Interface Circuit Diagram

9. RS422A Interface Circuit

The RS422A interface circuit diagram is shown in Fig. 9-1. As can be seen in the figure, when TXD CONTROL is L, the line driver IC14 becomes enable, going into the ready-to-receive state. At this time, the line receiver IC15 becomes disable. When TXD CONTROL is H, IC14 becomes disable, while IC15 becomes enable, going into the ready-to-receive state. Communication is actually made through 2 lines although usually done through 4 lines (including GND FG). These 2 lines are used for both transmitting and receiving of data.

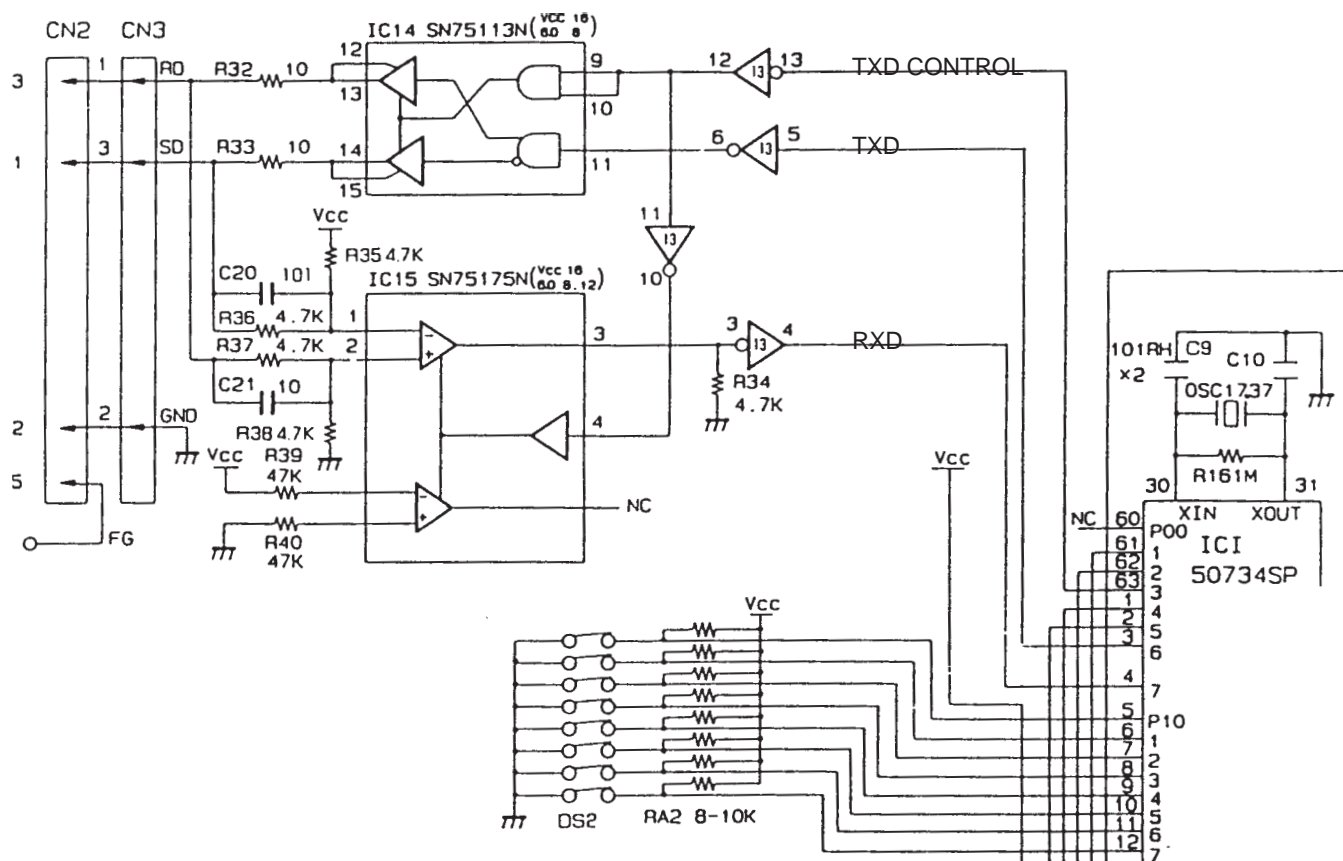


Fig. 9-1 RS422A Interface Circuit

10. Power Circuit

This power circuit supplies DC 5 V for the control circuit and DC 24 V for driving the printer mechanism. When the POWER switch is turned on, the AC voltage is applied to the transformer T after noise is eliminated by the capacitors C1 to C4 and noise filter NF. For the secondary voltage of transformer, all waveforms are rectified at both the DC 5 V side and DC 24 V side. IC1 indicates the regulator IC and Tr1 the current boosting transistor which can generate DC 24 V constantly. The constant voltage can be obtained by the diode connected to the base side of Tr3 and Zener diode, while DC 5 V can be obtained by the Darlington-connected transistor Tr2 for current boost. The diode D5 also serves as temperature compensation.

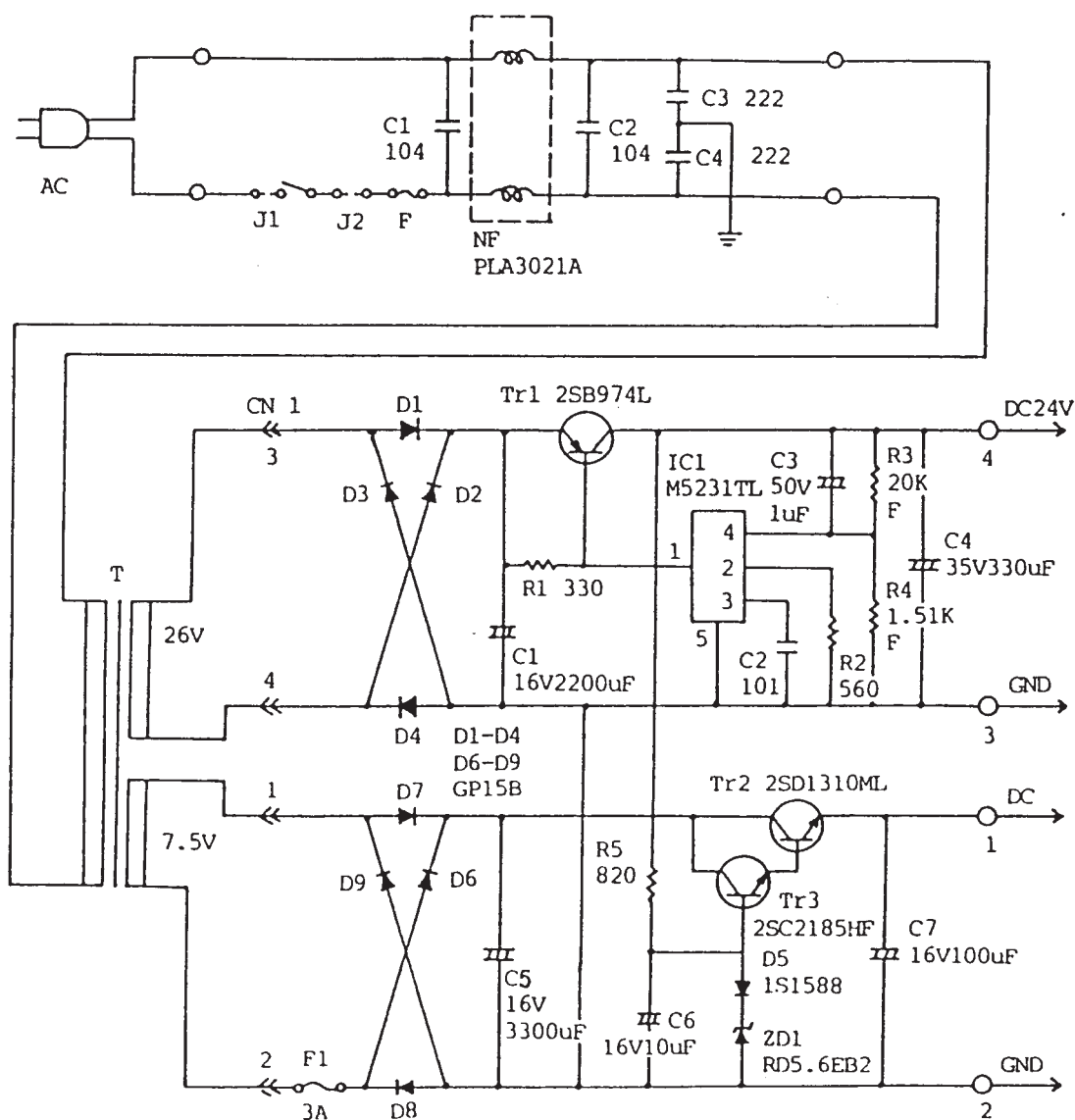


Fig. 10-1. Power Supply Circuit

Chapter 3

Auto Cutter

1. Maintenance and Handling

1) Precautions for Handling

(1) Precautions for use

Do not cut the paper other than the specified recording paper or do not pull the recording paper on the way of cutting; otherwise, resulting in damage of the blade section and reduction of service life.

(2) Precautions for storage

Store the unit avoiding dust, dirt, high temperature and high humidity.

2) Cleaning

(1) Remove the dust of recording paper properly.

A good cleaning can be given by using the vacuum cleaner, etc.

(2) Use alcohol or benzine as a clearing solvent.

Thinner, trichlene, ketone, etc. may damage the plastic parts.

(3) After cleaning, lubricate as needed.

3) Lubrication

Lubrication is not especially required within 150,000 cuts.

However, the blade operates slow, oil is used up for cleaning, and disassembly, assembly and replacement are made, lubrication should be required.

Gear pivot	Maltenp	Brushing
Lock level shaft	"	"
Crank pin	Mo grease	"
Movable blade sliding section	"	"

2. Mechanism and Principle of Operation

1) Outline of Mechanism

The AC-2 and AC-3 are designed as the DP-505 and DP-600 small dot printers and characterized by compact and lightweight types. The mechanism of this unit consists of 4 blocks; frame, power transmission mechanism, detector, and movable blade mechanism.

2) Mechanism and Principle of Operation

2)-1 Power transmission mechanism

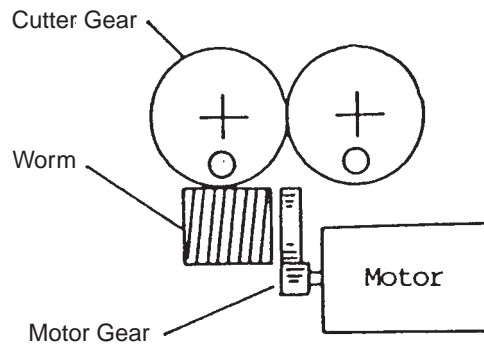


Fig. 1

The reduction gear train of this auto cutter is composed of the motor gear mounted onto the motor shaft, worm, and two cutter gears. One rotation of the motor gear rotates the cutter gear by $7/520$ ($\doteq 1/74$) (See. Fig. 1.)

2)-2 Detector

The detector is composed of the mechanism contract switch and cutter gear cam.

This detector detects the home position of the movable blade for partial cut (see Fig. 2), turn-around position (see Fig. 3) and returned blade. It is turned on when the blade is at the home position and turned off when the blade returns. The position where the detector is turned off from on after starting of the movable blade is the turn-around position for partial cut.

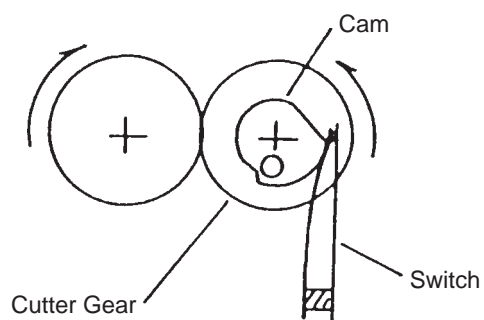


Fig. 2

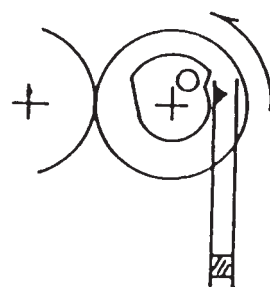


Fig. 3

2)-3 Movable blade mechanism

The movable blade is changed into a linear motion by the crank pins and starts cutting the recording paper.

(1) Full cut

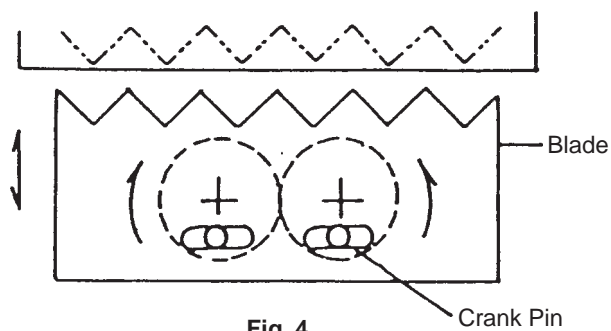


Fig. 4

At full cut, the crank pins turn one time and return to the home position. The movable blade moves 12 mm.

(2) Partial cut

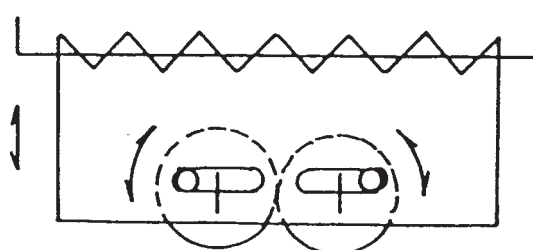


Fig. 5

At partial cut, the crank pins go into reverse at the moment they receive the switch signal and return to the home position. The movable blade moves 9 mm.

3. Repairing (Troubleshooting)

For troubleshooting, the repairing method will be explained by classifying the items as shown below.
Make sure of the cause according to the items and find out the trouble portions for repairing.

- (1) Phenomenon ----- Find out the phenomenon of trouble from this column.
- (2) Condition ----- Even in the same faulty phenomenon, the trouble condition may be different.
Check it, comparing with the content of this column.
- (3) Cause ----- The causes are listed on the basis of the trouble condition. Find out which cause is applied.
- (4) Check Point and Method --- The check method to find out the cause if described.
- (5) Troubleshooting ----- Repair the faulty portions according to the method described in this column.

Phenomenon	Condition	Cause	Check Point and Method	Troubleshooting
1. The motor does not rotate.	<ul style="list-style-type: none"> The motor does not rotate even if the rotation command is entered. 	1. Abnormality in input power supply for motor	<ul style="list-style-type: none"> Make sure that the input power supply is furnished. Check the both terminals of the motor with the tester, etc. 	<ul style="list-style-type: none"> If the voltage is out of rating, correct the power supply circuit.
		2. Motor failure	<ul style="list-style-type: none"> Apply the rated voltage to the both terminals of the motor and check if the motor rotates. 	<ul style="list-style-type: none"> Replace the motor if not rotate.
		3. Lock due to entrance of foreign matters into the rotation section	<ul style="list-style-type: none"> Detach the cutter cover to check the movable section. 	<ul style="list-style-type: none"> Eliminate the foreign matters.
2. The recording paper cannot be cut.	<ul style="list-style-type: none"> The motor operates temporarily and stops when the rotation command is entered. 	1. Detecting switch failure	<ul style="list-style-type: none"> Check the switch output with a tester, etc. 	<ul style="list-style-type: none"> Replace the switch if an abnormality is found.
		1. Inappropriate recording paper 2. Entrance of foreign matters into the passage of recording paper	<ul style="list-style-type: none"> Measure the thickness of the recording paper. (0.1 mm or less). Check the paper passage. 	<ul style="list-style-type: none"> Use the specified recording paper. Eliminate the foreign matters.
	<ul style="list-style-type: none"> Full cut is normal In partial cut, four uncut portions or more remain 	1. Deformation of the cutter cover 2. Clogging of paper wastes or oil shortage of the blade sliding section	<ul style="list-style-type: none"> Detach the cutter cover to check its warping, etc. Detach the cutter cover to check the paper dust. 	<ul style="list-style-type: none"> Replace the cover if deformed. Eliminate the paper dust and lubricate.
		1. Damage or abrasion of the movable blade	<ul style="list-style-type: none"> Dismount the movable blade to check its edge. 	<ul style="list-style-type: none"> Replace the blade if damaged or worn.
	<ul style="list-style-type: none"> The blade does not cut well 			

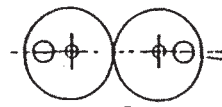
4. Disassembly/Assembly

1) Disassembling Procedure

Perform the disassembly in a reverse manner of the assembling procedure.

2) Assembling Procedure

Perform the assembly according to the assembling procedure as shown in the separate table. Numbers in Exploded View at the end of this chapter are used as drawing numbers.

Assembling Procedure	Name of Assembly Parts	Drawing No.	Assembling and Notes
1	Cutter Frame Assy	1	
2	Paper Guide	2	
3	M2.6 × 8 × 2	3	
4 *	Lock Lever R Assy	4	
5 *	E 3	6	Lubricate the lock lever shaft (Maltenp)
6 *	Lock Lever L Assy	5	
7 *	E 3	6	Hook the lock lever side of the lock lever SP first.
8 *	Lock Lever SP × 2	7	
9	Cutter Gear Assy × 2	8	•Lubricate the gear shaft (Maltenp)
10	E 2.5 × 2	9	•Align the crank pin and gear shaft.
11	Motor Assy	10	 Crank Pin
12	Worm Assy	11	Lubricate the worm shaft (Maltenp)
13	M2.6 × 5 × 2	12	
14	M2 × 8 (SW) × 2	13	Lubricate the teeth of gears (Mo grease)
15	Bind Wire	14	
16	Cutter SP × 2	15	
17	Guide Plate	16	
18	Movable Blade	17	Lubricate the movable blade sliding section and crank pin (Mo grease)
19	Cutter Cover Assy	18	Mount the cutter cover, making sure that the guide plate and movable blade are correctly inserted into the guide shaft and crank pin.
20	M2.6 × 8 × 2	3	
21	E 3 × 2	6	

The parts marked with * are not required for AC-3.

Chapter 4

Circuit Diagram

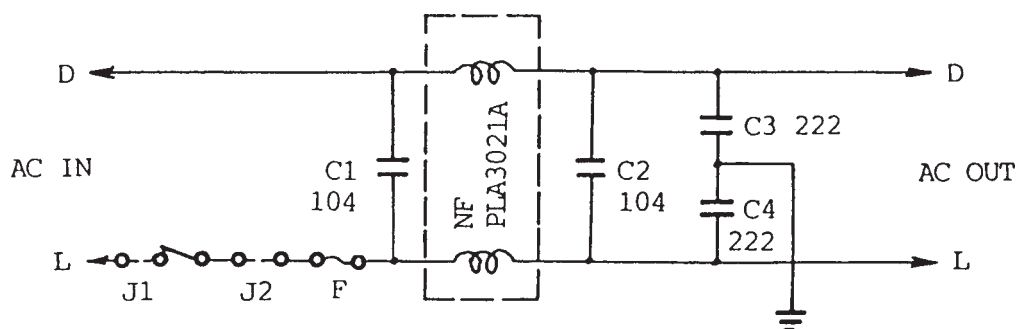


Fig. 4-2. Noise Filter Circuit Diagram CBM710/720-002-00

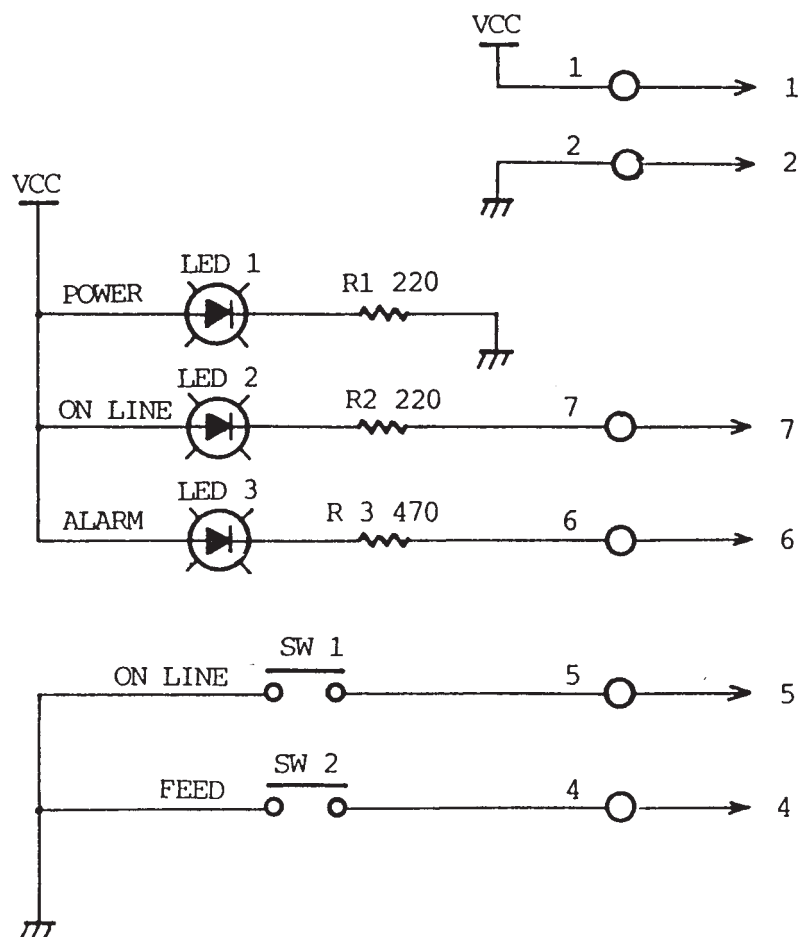


Fig. 4-3. Operation Panel circuit Diagram CBM710/720-003-00

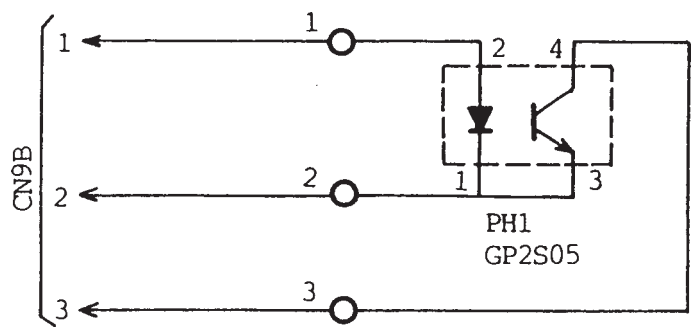


Fig. 4-4. Paper End Sensor Circuit Diagram CBM710/720-004-00

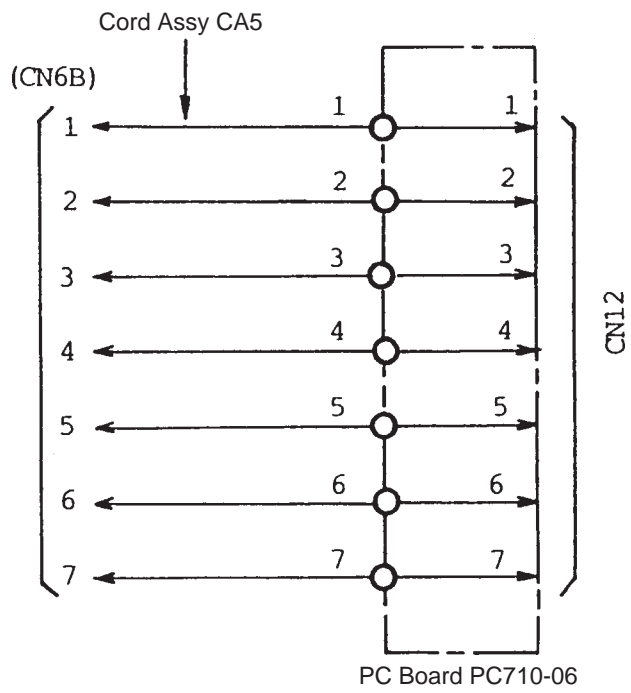
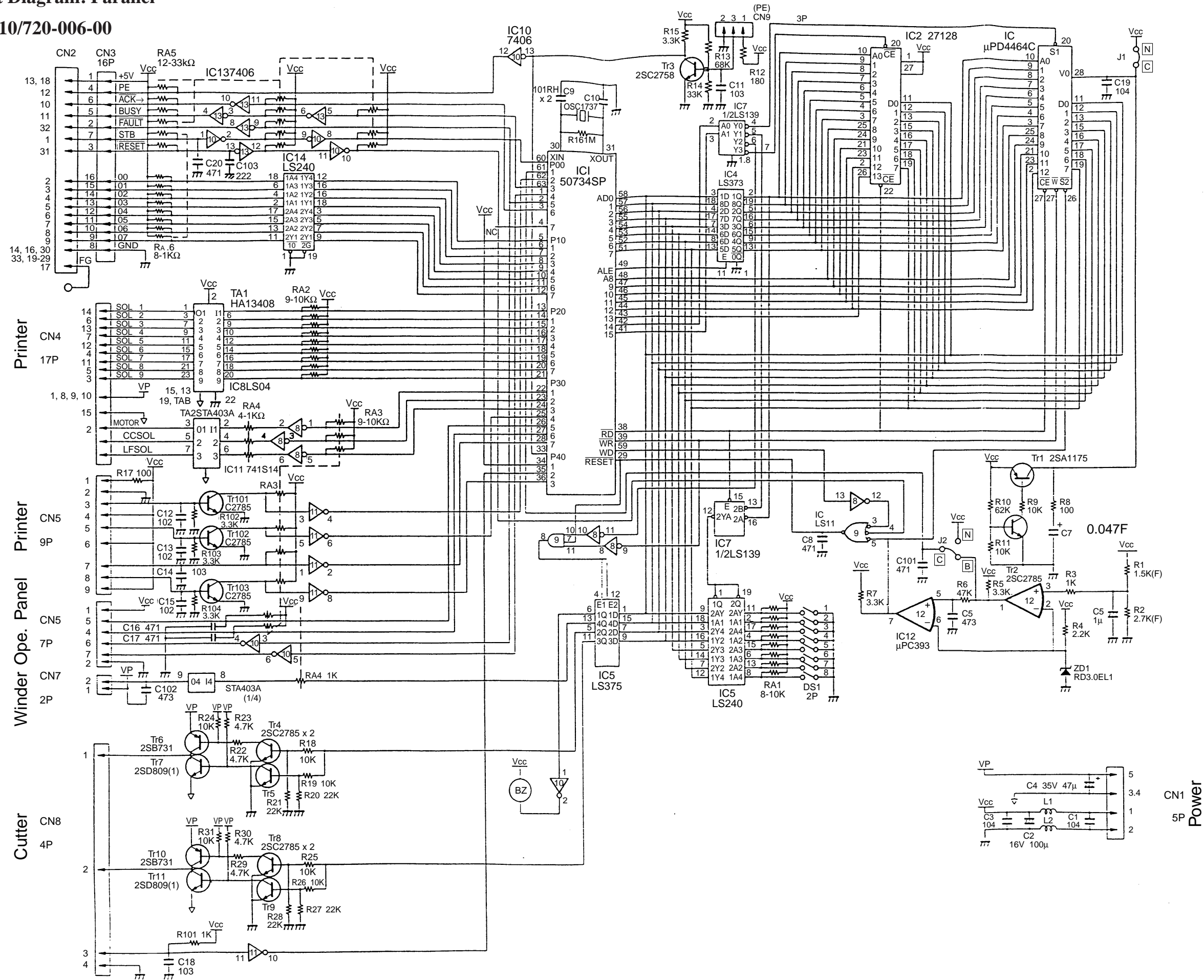
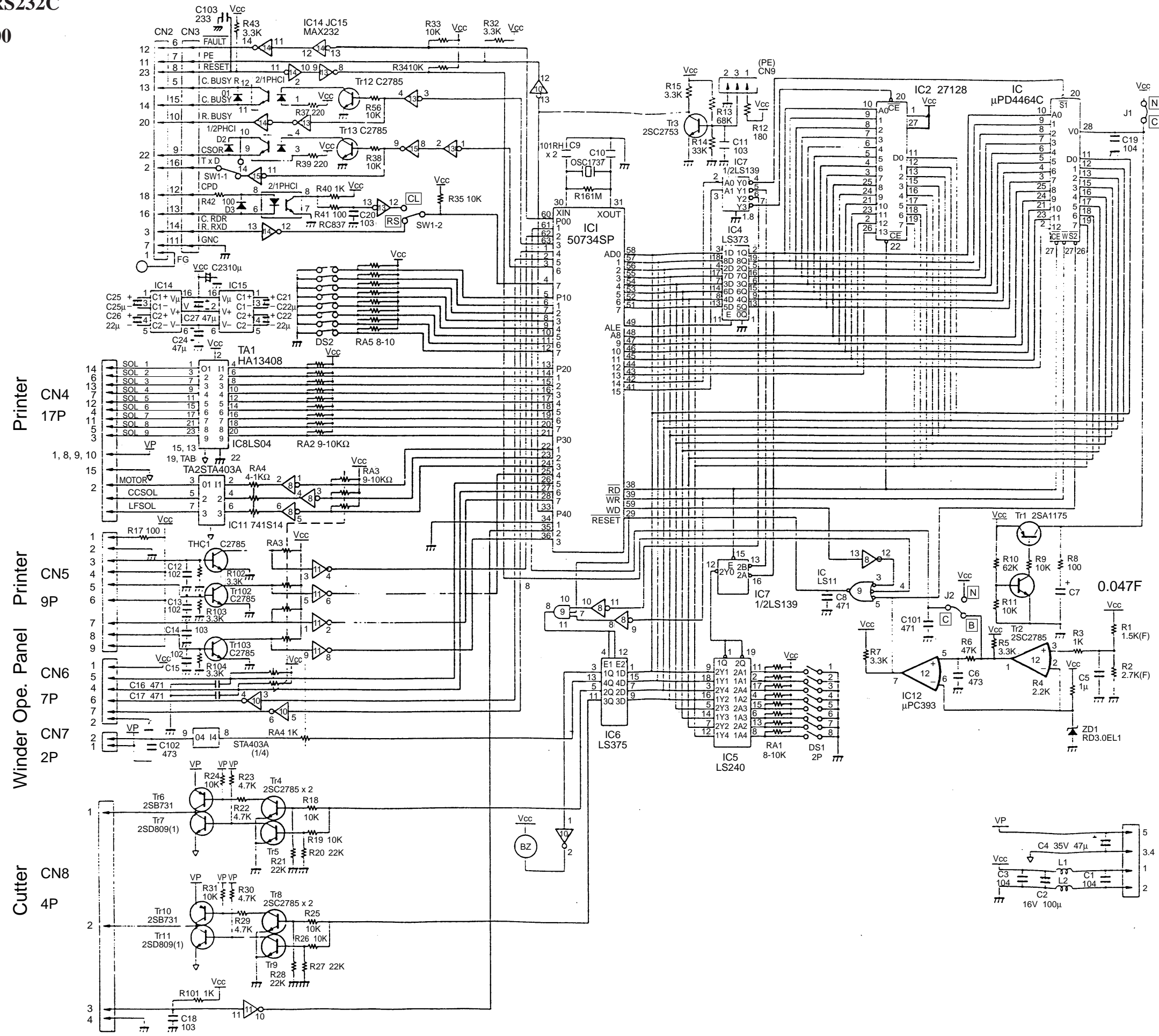


Fig. 4-5. OP Junction Circuit Diagram CBM 710/720-005-00

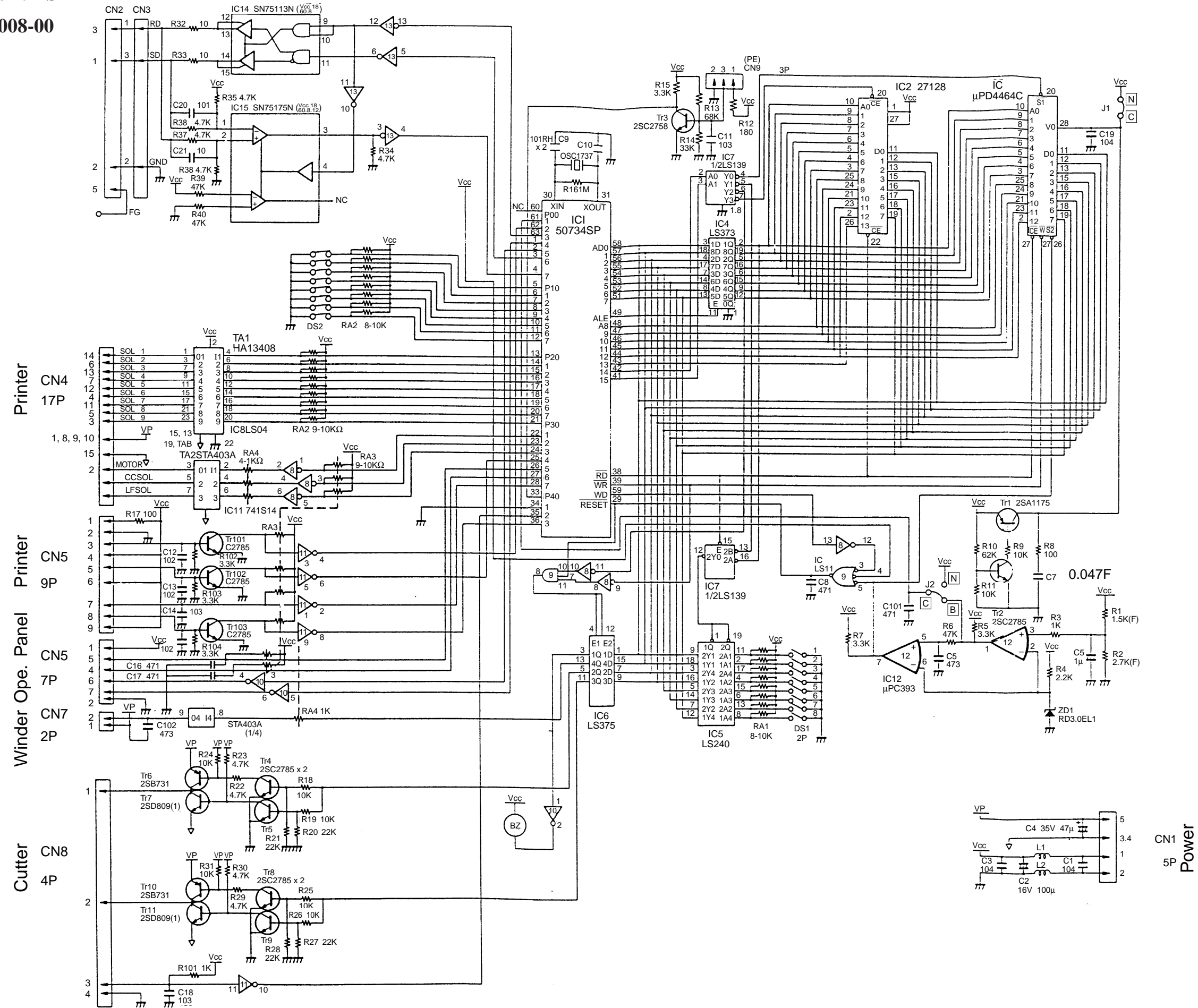
4-6. Circuit Diagram: Parallel
CBM710/720-006-00



4-7. Circuit Diagram: RS232C
CBM710/720-007-00



4-8. Circuit Diagram: RS422A
CBM710/720-008-00



Chapter 5

Parts List

PARTS LIST

1. Exploded View

CBM-710/720

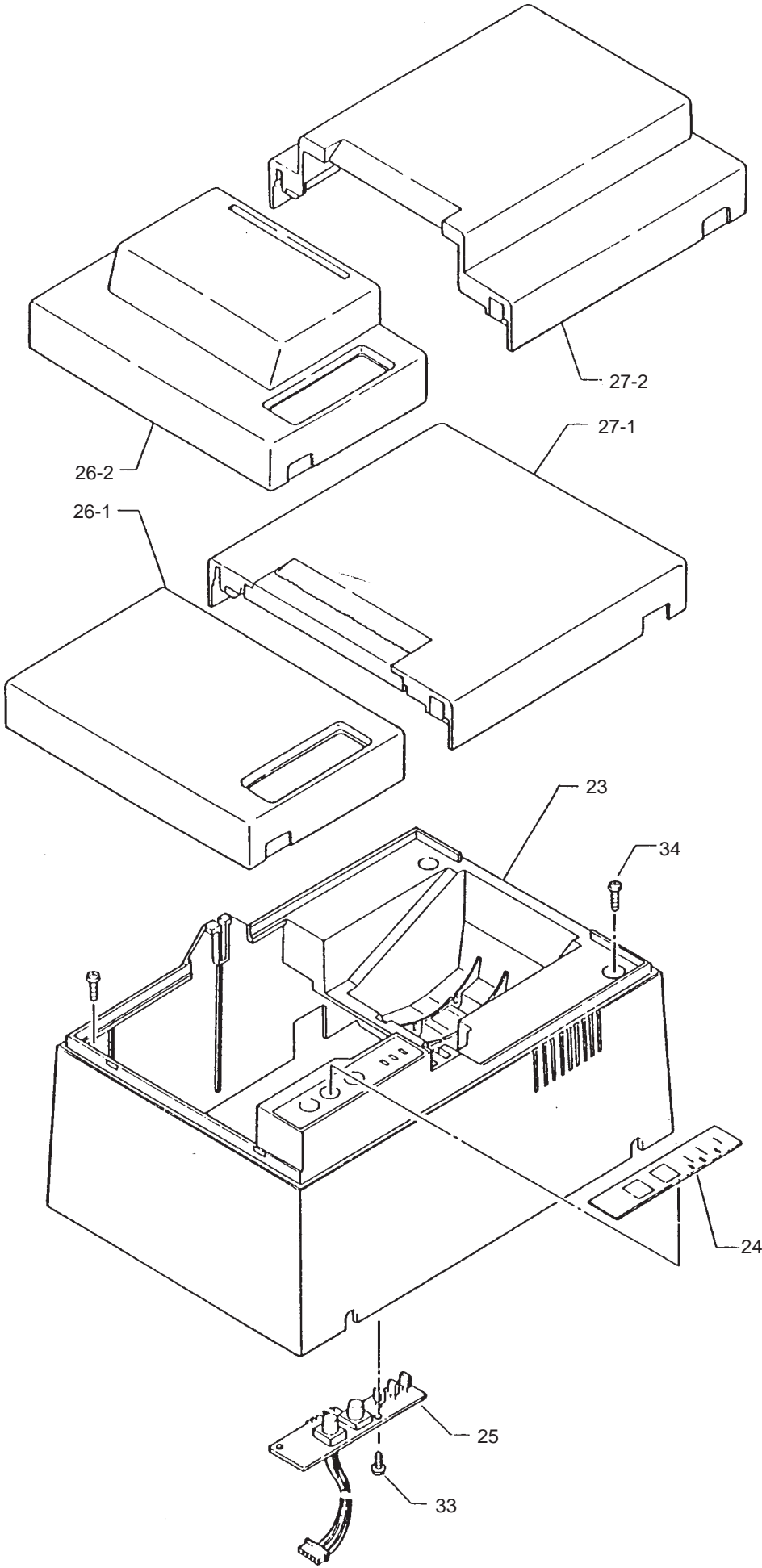
Ref. No.	Parts No.	Description	Q'ty	Remarks
1	E 4002-230	Chassis Sub Assy	1	
2	E 4002-240	Cover for PCB	1	
3	E 4035-620	Grounding Plate	1	
4	E 6601-210	Supporter for Printer	2	
5	E 4000-520	PE Detector unit		
6	E 4018-140	Spacer for PCB	1	
7	E 4000-530	Operation Panel Junction Unit		
8-1	E 4004-180	Inlet NC-174-C	1	
12	E 4000-510	Noise Filter Unit 120V	(1)	115V
	E 4000-500	Noise Filter Unit 230V EMI Class A	(1)	220-240V
	E 4000-515	Noise Filter Unit 230V EMI Class B	(1)	220-240V
11	E 4023-040	NF PCB Holder	1	
13	E 4001-740	Power Transformer 25-0091	1	115V
	E 4001-745	Power Transformer 25-0092	1	only
				220-240V
				only
14	E 4018-160	Supporter for PCB	2	
15	E 4000-490	Power Supply Unit		
16	E	Control Board Unit		
17	E 4024-040	Connector Cover	1	AW only
18-1	E 4800-975	Cord Assy CA 1	1	
-2	E 4800-980	Cord Assy CA 2	1	
	E 4800-985	Cord Assy CA 3	1	Validation
19	E 6601-220	Printer Stand	2	
20-1	E 6600-780	Printer DP610-DFC		
	E 6600-790	Printer DP612-DFC		
	E 6600-800	Printer DP617-DFC		
	E 6600-810	Printer DP614-DFC		
-2	E 8000-010	Auto Cutter AC-2	1	CBM720
				only
	E 8000-	Auto Cutter AC-2F		
21	E 6202-800	Bottom Plate	1	
22	E 6302-190	Rubber Foot	4	
23	E 62010160	Top Case	1	
24	E 5200-070	OP. Panel Overlay 1S	1	

PARTS LIST

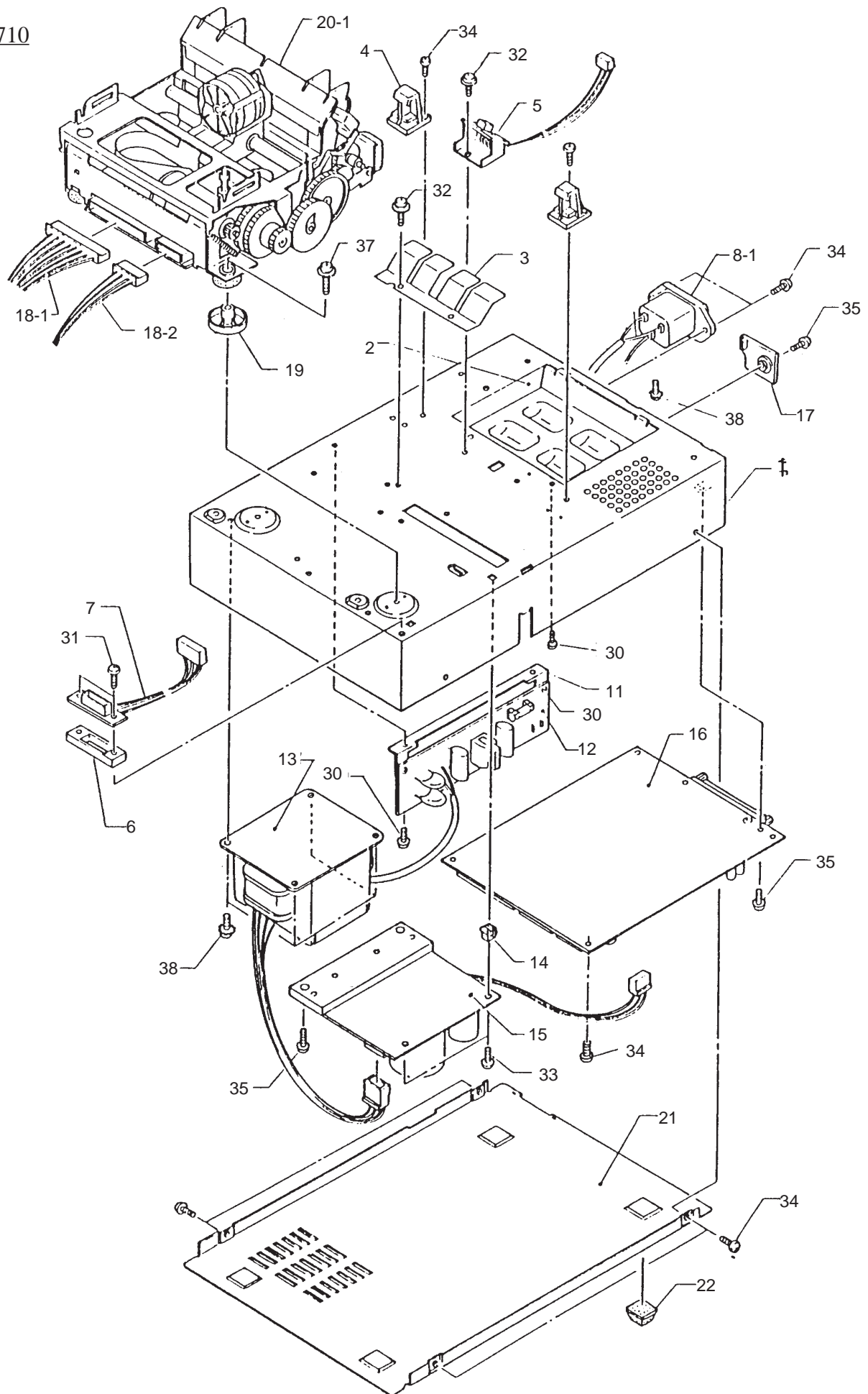
CBM-710/720

Ref. No.	Parts No.	Description	Q'ty	Remarks
25	E 4000-530	Operation Panel Unit		
26-1	E 6204-590	Printer Cover	1	CBM710 only
-2	E 6204-600	Printer Cover (AC)	1	CBM720 only
27-1	E 6204-700	Paper Cover	1	CBM710 only
-2	E 6204-710	Paper Cover (AC)	1	CBM720 only
-3	E 6204-720	Paper Cover (V)	1	Validation
30	S 3 X 6-S	Pan Head Screw	6	
31	S 3 X 10-S	Pan Head Screw	2	
32	SW 3 X 6	Pan Head Screw/W	3	
33	SBST 3 X 8	Tapping Screw	4	
34	S 3 X 6	Pan Head Screw	15	
35	S 3 X 10	Pan Head Screw	4	
37	SW 3 X 14	Pan Head Screw/W	2	
38	SWT 4 X 6	Pan Head Screw/TW	5	
40	E 6100-530	AC Cord	(1)	115V only
	E 6200-535	AC Cord	(1)	220-240V only

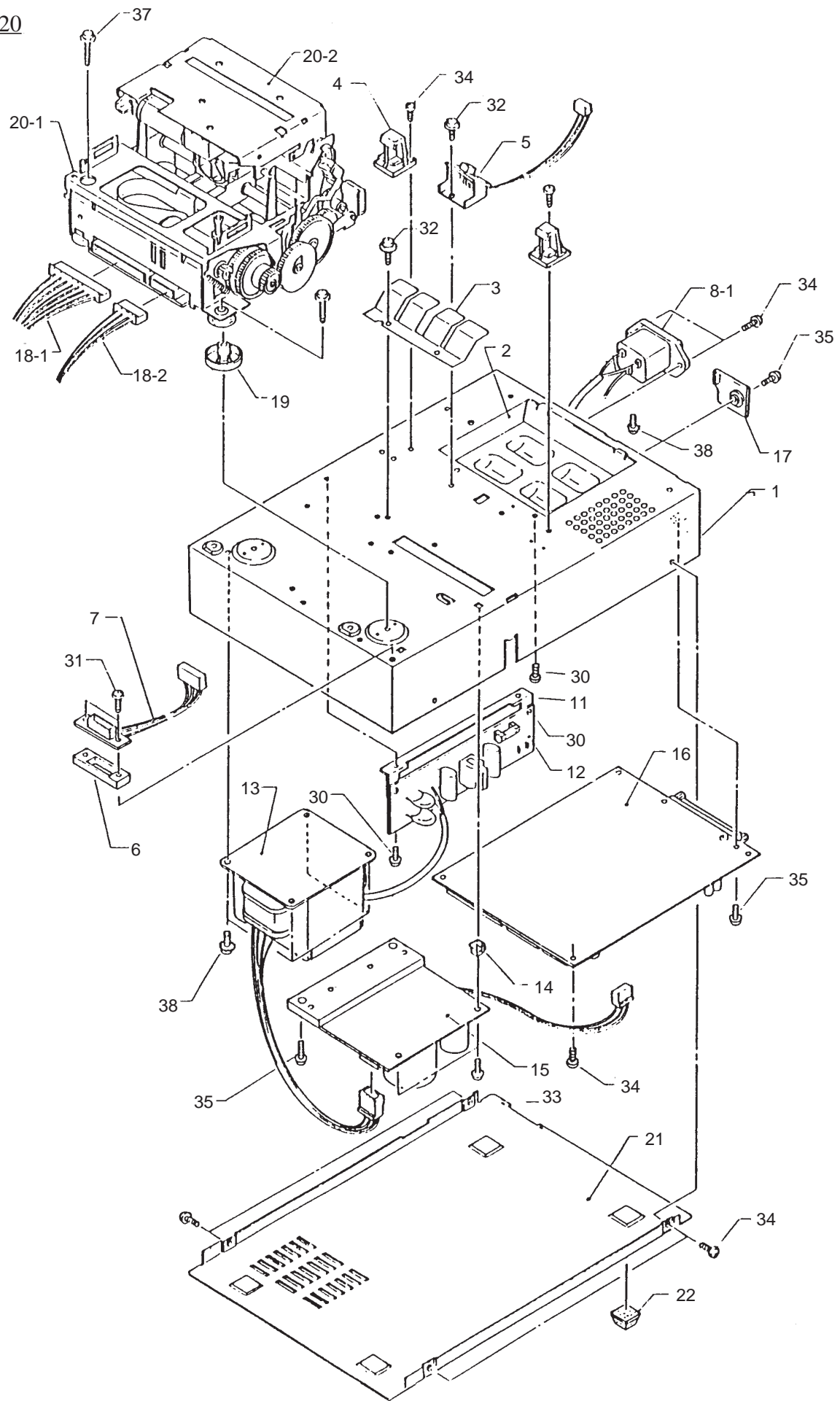
CBM-710,720



CBM-710

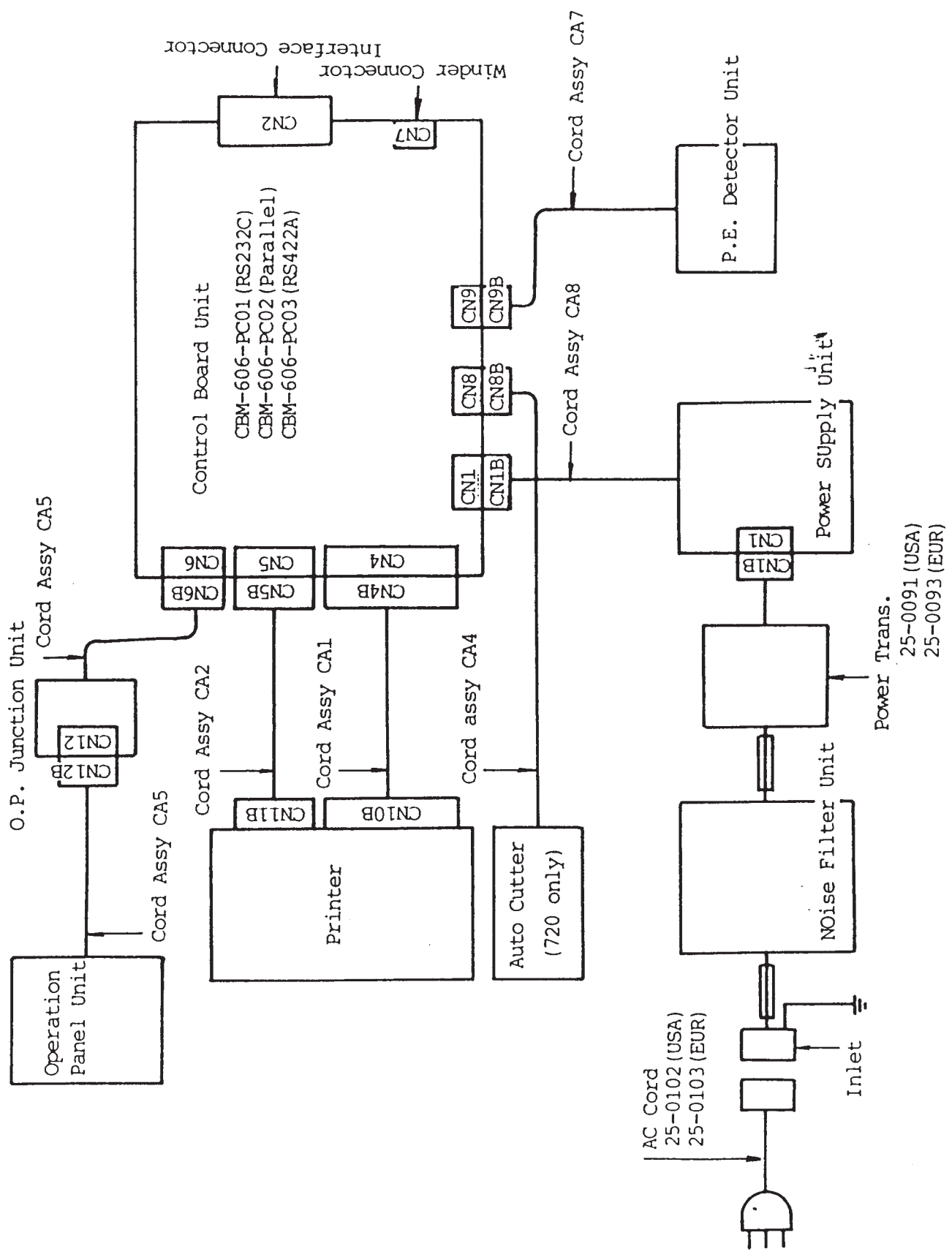


CBM-720



PARTS LIST**2. Block Diagram****CBM-710/720**

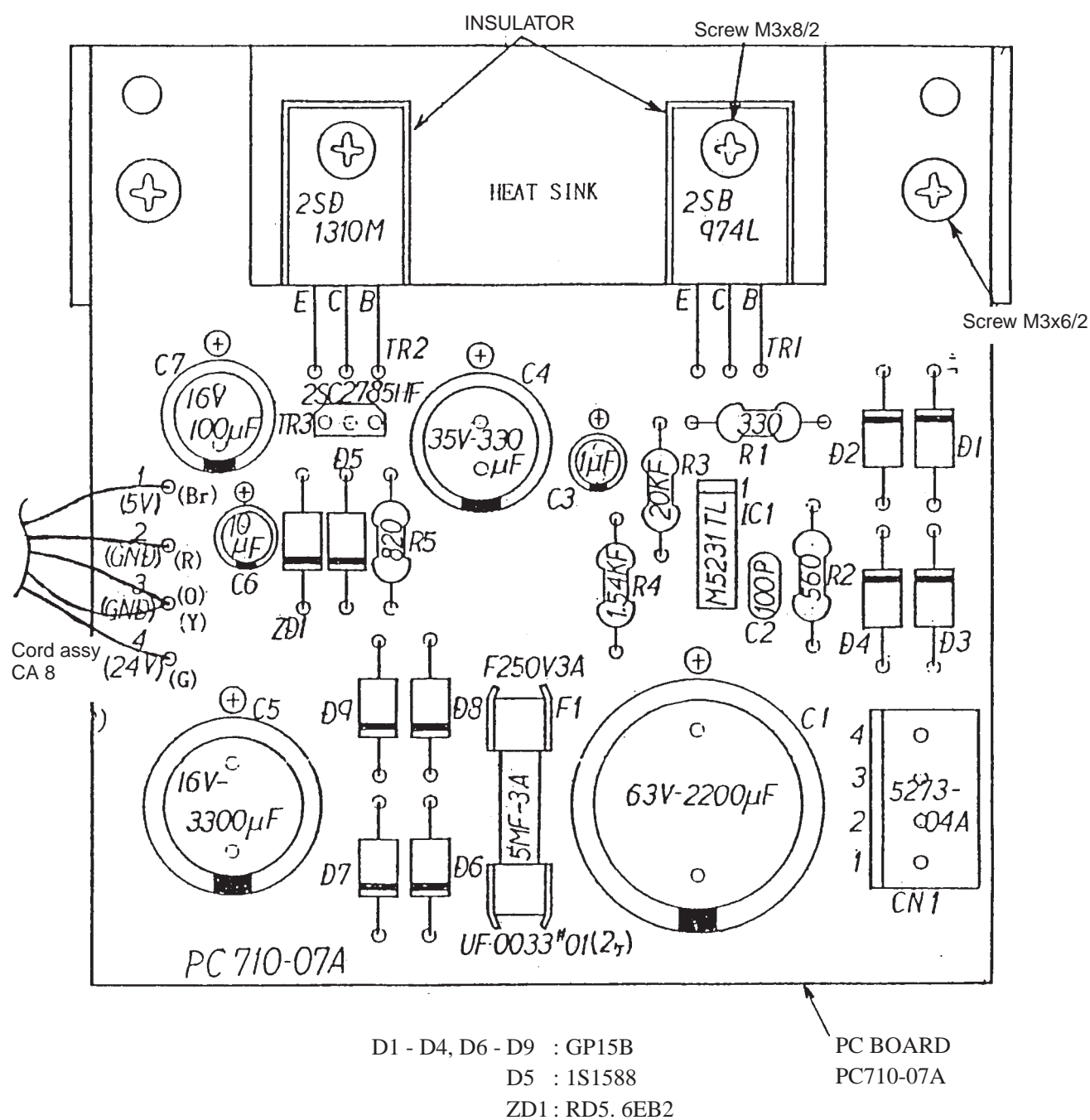
Ref. No.		Parts No.	Description		Q'ty	Remarks
CA	1	E 6100-530	AC cord	25-0102	1	115V only
	2	E 6100-535	AC cord	25-0103	1	220-240V only
	3	E 4004-180	Inlet	NC-174C	1	
	4	E 4001-740	Power Transformer	25-0091	1	115V only
	5	E 4001-745	Power Transformer	25-0093	1	220-240V only
	6	E 4800-975	Cord Assy	CA 1	1	
	7	E 4800-980	Cord Assy	CA 2	1	
	8	E 4800-985	Cord Assy	CA 3	1	
	9	E 4800-990	Cord Assy	CA 4	1	CBM720 only
	10	E 4800-960	Cord Assy	CA 5	1	
	11	E 48000010	Cord Assy	CA 7	1	
	12	E 4800-970	Cord Assy	CA 8	1	



BLOCK DIAGRAM

PARTS LIST**4. Power Supply Unit****CBM-710/720**

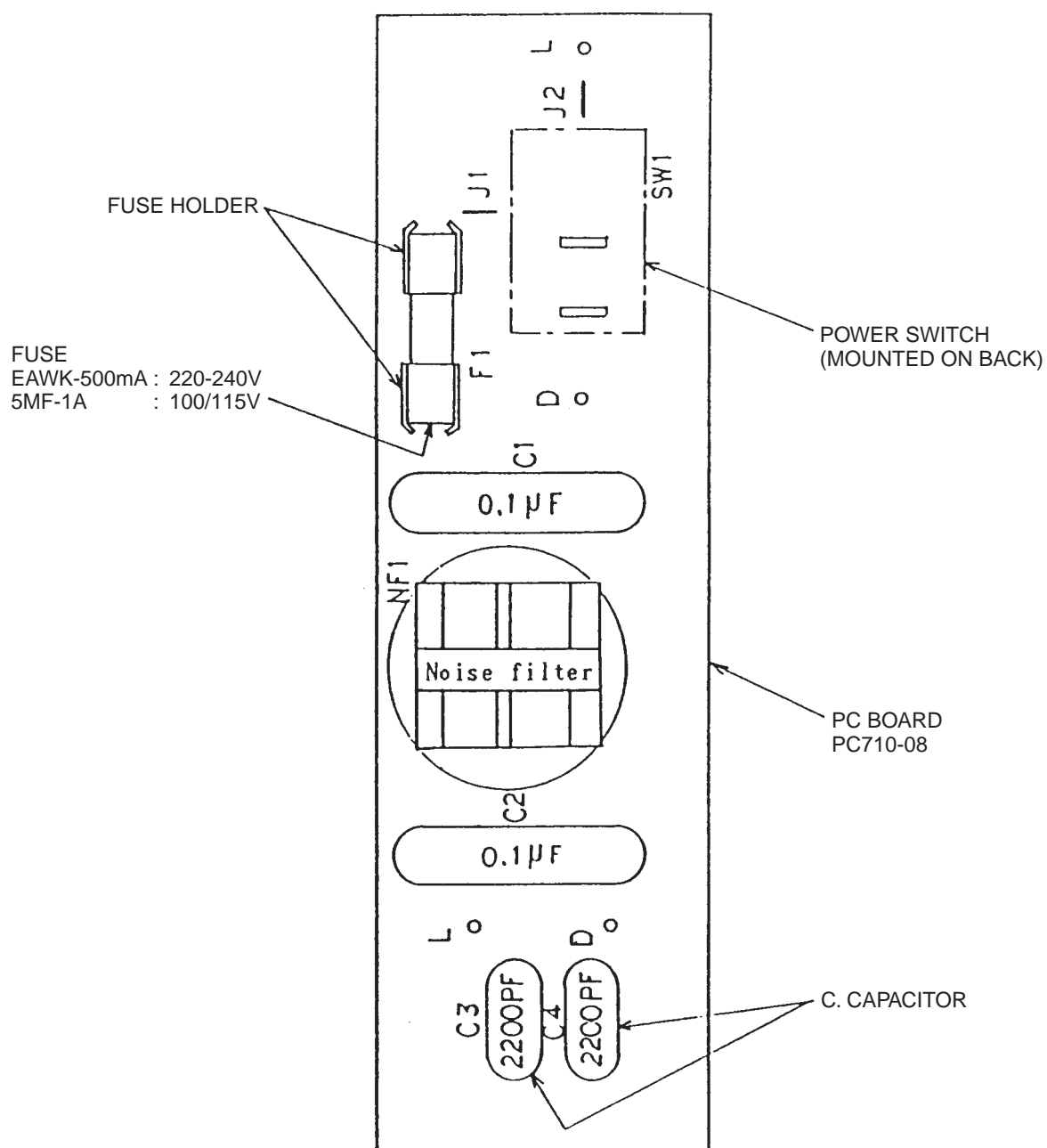
Ref. No.	Parts No.	Description	Q'ty	Remarks
IC 1	E 390-110	Regulator M5231TL	1	
TR 1	E 324-010	Transistor 2SB974L	1	
2	E 360-040	Transistor 2SD1310M1	1	
3	E 359-278	Transistor 2SC2785HF	1	
D 1-4	E 400-130	Diode GP-15B	8	
6-9				
5	E 400-010	Diode 1S1588	1	
ZD	E 405-130	Zener Diode RD5. 6EB2	1	
R 1	E 3331-041	Resistor 1/4W 330 J	1	
2	E 3561-041	Resistor 1/4W 560 J	1	
3	E 3203-100	Resistor 1/4W 20K F	1	
4	E 3152-110	Resistor 1/4W 1.54K F	1	
5	E 3821-041	Resistor 1/4W 820 J	1	
C 1	E 2022-740	El. Capacitor 63PN-G2200A (25X30)	1	
2	E 2110-170	C. Capacitor DD804B101K50	1	
3	E 2001-650	El. Capacitor 50MR-1	1	
4	E 2033-750	El. Capacitor 35MR-330	1	
5	E 2033-740	El. Capacitor 16MR-3300	1	
6	E 2010-020	El. Capacitor 16MR-10	1	
7	E 2010-010	El. Capacitor 16MR-100	1	
CN 13	E 4800-965	Connector 5273-04A	1	
	E 4800-970	Cord Assy CA 8	1	
	E 4010-300	Heat Sink 25-0061	1	
	E 4019-100	Insulation Sheet 2067A-5051	2	TR 1,2
F 1	E 4005-465	Fuse 5MF-3A	1	
	E 4006-220	Fuse Holder UF-0033#01	2	
	S 3 x 8-S	Pan Head Screw M3 x 8	2	TR 1,2
	S 3 x 6-S	Pan Head Screw M3 x 6	2	



PARTS POSITION : POWER SUPPLY UNIT

PARTS LIST**4. Noise Filter Unit****CBM-710/720**

Ref. No.	Parts No.	Description	Q'ty	Remarks
SW 1	E 4003-495	Power Switch SF-W101A-01BB	1	
F 1	E 4005-470	Fuse EAWK-500mA	1	220-240V only
	E 4005-475	Fuse 5MF-1A	1	100, 115V only
	E 4006-220	Fuse Holder UF-0033#01	2	
NF	E 4009-270	Noise Filter PLA3021A	1	
C 1,2	E 2310-010	Film Capacitor CFX22E104M	2	
3,4	E 2122-735	C. Capacitor DE7100F222MVA1-KC	2	100, 115V only
3,4	E 2122-725	C. Capacitor DE1410E222MACT4-KD	2	220-240V only



PARTS POSITION : NOISE FILTER UNIT

PARTS LIST

5. Control Board Assy : RS232C

CBM-710/720

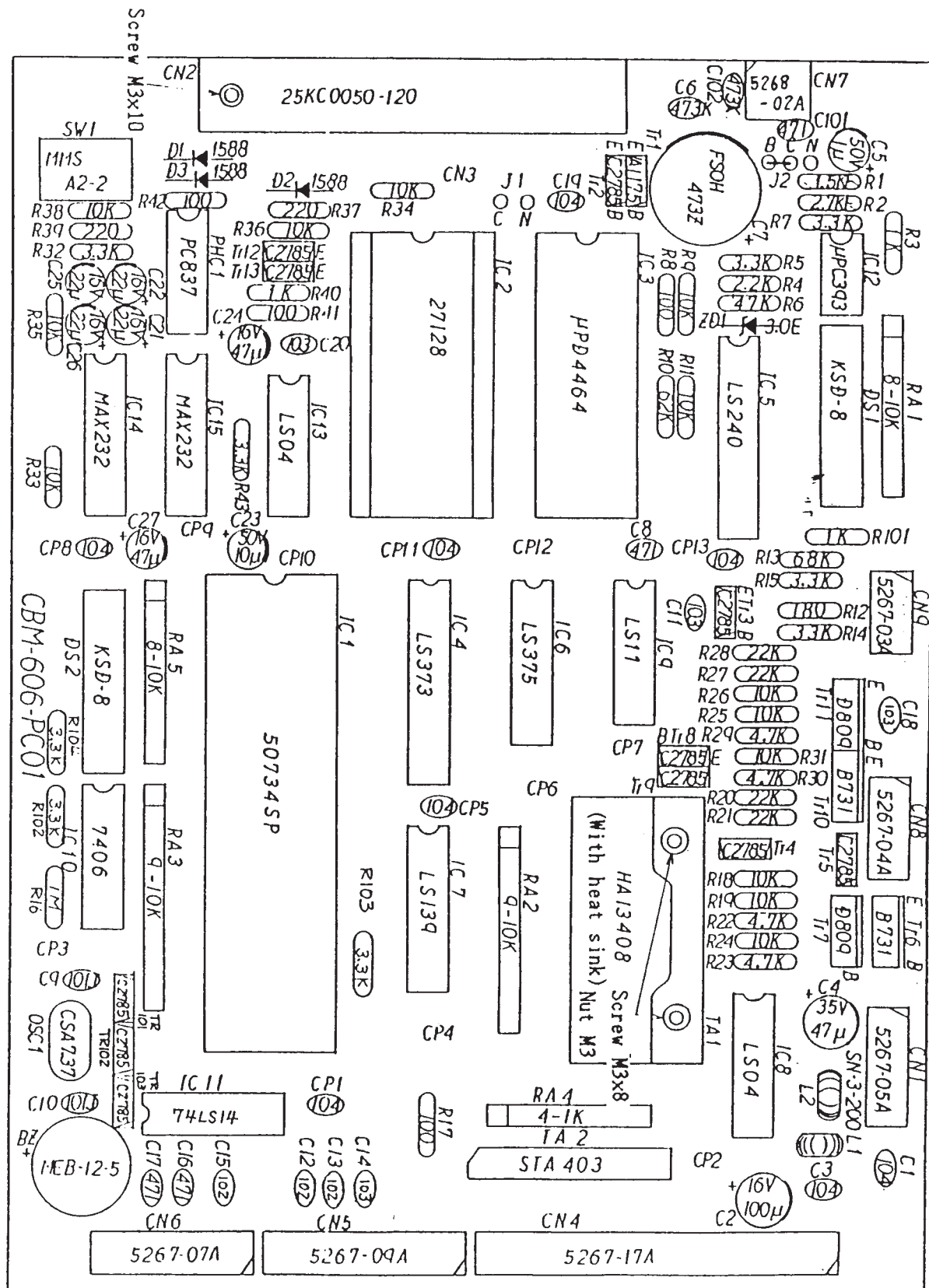
Ref. No.	Parts No.	Description	Q'ty	Remarks
IC	1	E 104-200	LSI (CPU) M50734SP	1
	2	E 107-130	LSI (PROM) M5L27128K	1
	3	E 104-220	LSI (RAM) uPD4464C-15L	1
	4	E 2010170	IC (TTL) SN74LS373N	1
	5	E 2010220	IC (TTL) SN74LS240N	1
	6	E 2010230	IC (TTL) SN74LS375N	1
	7	E 2010240	IC (TTL) SN74LS139N	1
8, 13	E 2010250	IC (TTL) SN74LS04N	1	
	9	E 2010260	IC (TTL) SN741S11N	1
	10	E 2010200	IC (TTL) SN7406N	1
	11	E 2010270	IC (TTL) SN74LS14N	1
	12	E 202-610	IC uPC393C	1
14, 15	E 2010040	IC (CMOS) MAX232CPE	2	
TA	1	E 390-100	Tr. Array HA13408	1
	2	E 390-120	Tr. Array STA403A	1
TR	1	E 319-117	Transistor 2SA1175HF	1
	2-5	E 359-278	Transistor 2SC2785HF	11
	8,9			
	12,13			
	101-103			
	6,10	E 327-030	Transistor 2SB731L	2
	7,11	E 360-020	Transistor 2SD809(1)L	2
ZD	1	E 403-060	Zener Diode RD3. 0EL1	1
D	1-3	E 400-010	Diode IS1588	3
PHC	1	E 391-080	Photocupprer PC837	1
RA	1,5	E 3103-140	Re. Array SR-8RA-10K	2
	2,3	E 3103-170	Re. Array SR-9RA-10K	2
	4	E 3013-090	Re. Array SR-4RB-1K	1

PARTS LIST**CONTROL BOARD ASSY : RS232C****CBM-710/720**

Ref. No.	Parts No.	Description	Q'ty	Remarks
R 1	E 3152-100	Resistor 1/4W 1.5K F	1	
2	E 3272-090	Resistor 1/4W 2.7K F	1	
3,40,101	E 3102-041	Resistor 1/4W 1K J	3	
4	E 3222-041	Resistor 1/4W 2.2K J	1	
5,7,15 32,43 102-104	E 3332-041	Resistor 1/4W 3.3K J	8	
6	E 3473-041	Resistor 1/4W 47K J	1	
8,17,41 42	E 3101-041	Resistor 1/4W 100 J	4	
9,11,18 19,24-26 31,33-36 38	E 3103-041	Resistor 1/4W 10K J	13	
10	E 3623-041	Resistor 1/4W 62K J	1	
12	E 3181-041	Resistor 1/4W 180 J	1	
13	E 3683-041	Resistor 1/4W 68K J	1	
14	E 3333-041	Resistor 1/4W 33K J	1	
16	E 3105-041	Resistor 1/4W 1M J	1	
20,21 27,28	E 3223-041	Resistor 1/4W 22K J	4	
22,23 29,30 37,39	E 3472-041	Resistor 1/4W 4.7K J	4	
	E 3221-041	Resistor 1/4W 220 J	2	
C 1,3,19	E 2104-330	C. Capacitor DD306-63F104Z12	3	
2	E 2010-010	El. Capacitor 16MR-100	1	
4	E 2047-640	El. Capacitor 35MR-47	1	
5	E 2001-650	El. Capacitor 50MR-1	1	
6,102	E 2310-220	My. Capacitor DMY21H473K	2	
7	E 2000-020	El. Capacitor FS0H-473Z	1	
8,16 17,101	E 2147-060	C. Capacitor DD804-63B471K50	4	
9,10	E 2110-340	C. Capacitor DD107-63R101J50	2	
11,14 20	E 2110-270	C. Capacitor DD806-63F103Z50	3	
12,13 15	E 2110-380	C. Capacitor DD804-63B102K50	3	
18	E 2110-290	C. Capacitor DD806-63F103K50	1	
21,22 25,26	E 2022-500	El. Capacitor 16MR-22	4	
23	E 2010-650	El. Capacitor 50MR-10	1	
24,27	E 2047-615	El. Capacitor 16MR-47	2	

PARTS LIST**CONTROL BOARD ASSY : RS232C****CBM-710/720**

Ref. No.	Parts No.	Description	Q'ty	Remarks
CP 1,5,8 11,13	E 2110-300	C. Capacitor DD306-63F104Z12	5	
OSC	E 501-150	Crystal CSA7.37MT40	1	
L 1,2	E 4009-300	Coil SN-3-200	2	
BZ	E 7151-120	Buzzer MEB-12-5	1	
DS 1,2	E 5103-350	Dip Switch KSD-8	2	
SW 1	E 5104-330	Slide Switch MMS A2-2	1	
	E 4010-290	Heat Sink	1	for TA 1
	S 3 x 8	Pan Head Screw M3 x 8	2	for TA 1
	N 3-1-N	Nut M3	2	for TA 1
	S 3 x 10-S	Pan Head Screw M3 x 10	1	for CN 2
CN 1	E 4800-915	Connector 5267-05A-X	1	
2	E 4800-920	Connector 25KC0050-120	1	
4	E 4800-925	Connector 5267-17A-X	1	
5	E 4800-930	Connector 5267-09A-X	1	
6	E 4800-935	Connector 5267-07A-X	1	
7	E 4800-940	Connector 5268-02A-X	1	
8	E 4800-945	Connector 5267-04A-X	1	
9	E 4800-950	Connector 5267-03A-X	1	



Jump Wire Setting : RS232C

	with Back Up (B)	without Back Up (N)
Jumper 1	Open	C-N Short
Jumper 2	C-B Short	C-N Short

PARTS POSITION : CONTROL BOARD UNIT RS232C

PARTS LIST

6. Control Board Assy : Parallel

CBM-710/720

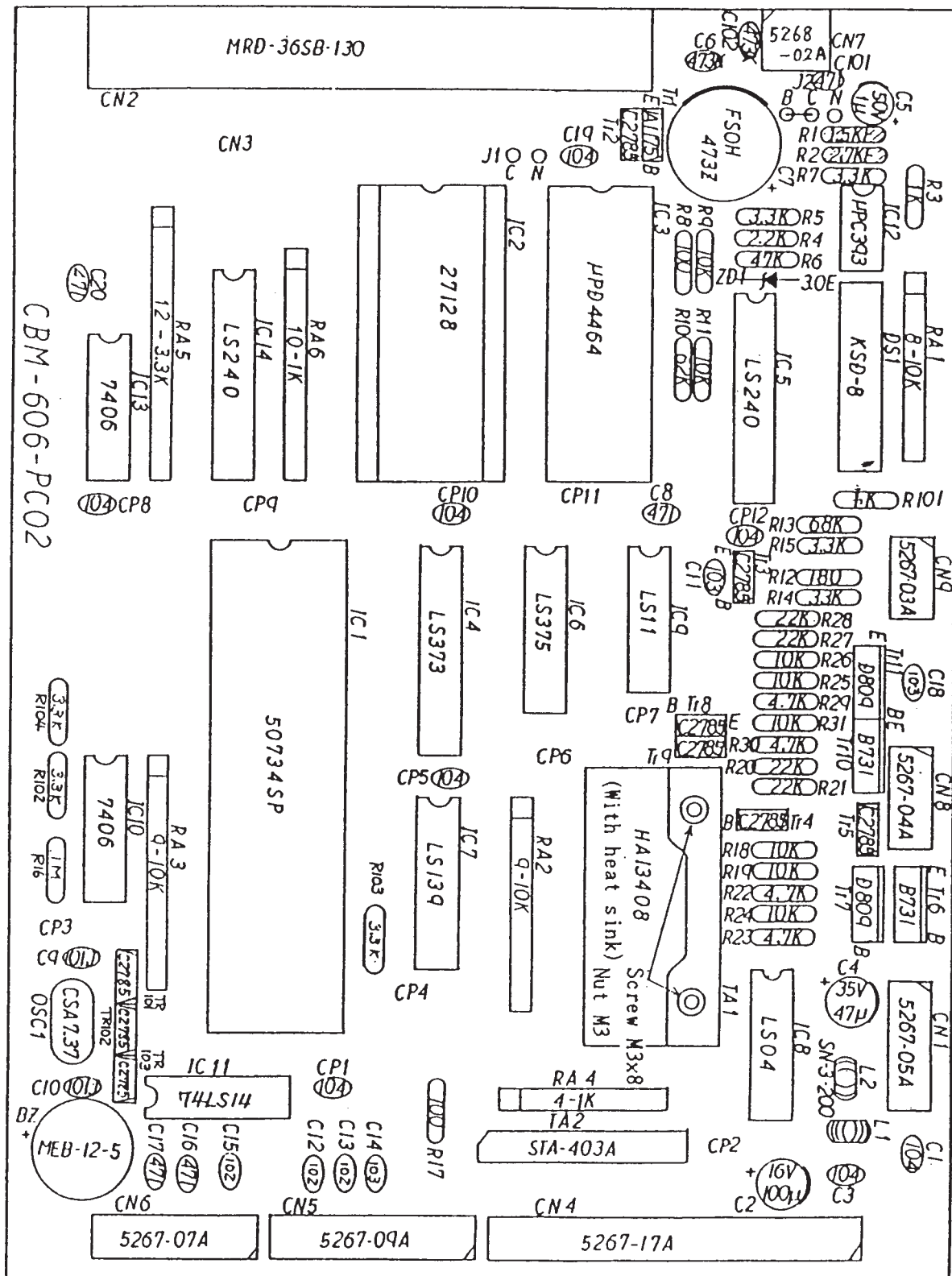
Ref. No.	Parts No.	Description	Q'ty	Remarks
IC	1	E 104-200	LSI (CUP) M50734SP	1
	2	E 107-130	LSI (PROM) M5L27128K	1
	3	E 104-220	LSI (RAM) uPD4464C-15L	1
	4	E 2010170	IC (TTL) SN74LS373N	1
	5,14	E 2010220	IC (TTL) SN74LS240N	2
	6	E 2010230	IC (TTL) SN74LS375N	1
	7	E 2010240	IC (TTL) SN74LS139N	1
	8	E 2010250	IC (TTL) SN74LS04N	1
	9	E 2010260	IC (TTL) SN74LS11N	1
	10,13	E 2010200	IC (TTL) SN7406N	1
	11	E 2010270	IC (TTL) SN74LS14N	1
	12	E 202-610	IC uPC393C	1
TA	1	E 390-100	Tr. Array HA13408	1
	2	E 390-120	Tr. Array STA403A	1
TR	1	E 319-117	Transistor 2SA1175HF	1
	2-5,8	E 359-278	Transistor 2SC2785HF	9
	9			
	101-103			
	6,10	E 327-030	Transistor 2SB731L	2
	7,11	E 360-020	Transistor 2SD809(1)L	2
ZD	1	E 403-060	Zener Diode RD3.0EL1	1
RA	1	E 3103-140	Re. Array SR-8RA-10K	1
	2,3	E 3103-170	Re. Array SR-9RA-10K	2
	4	E 3013-090	Re. Array SR-4RB-1K	1
	5	E 3332-120	Re. Array SR-12RA-3.3K	1
	6	E 3102-110	Re. Array SR-10RA-1K	1
R	1	E 3152-100	Resistor 1/4W 1.5K F	1
	2	E 3272-090	Resistor 1/4W 2.7K F	1
	3,101	E 3102-041	Resistor 1/4W 1K J	2
	4	E 3222-041	Resistor 1/4W 2.2K J	1
	5,7,15	E 3332-041	Resistor 1/4W 3.3K J	6
	101-104			
	6	E 3473-041	Resistor 1/4W 47K J	1

PARTS LIST**CONTROL BOARD ASSY : PARALLEL****CBM-710/720**

Ref. No.	Parts No.	Description	Q'ty	Remarks
R 8,17	E 3101-041	Resistor 1/4W 100 J	2	
9,11,18	E 3103-041	Resistor 1/4W 10K J	8	
19,24-26				
31				
10	E 3623-041	Resistor 1/4W 62K J	1	
12	E 3181-041	Resistor 1/4W 180 J	1	
13	E 3683-041	Resistor 1/4W 68K J	1	
14	E 3333-041	Resistor 1/4W 33K J	1	
16	E 3105-041	Resistor 1/4W 1M J	1	
20,21	E 3223-041	Resistor 1/4W 22K J	4	
27,28				
22,23	E 3472-041	Resistor 1/4W 4.7K J	4	
29,30				
C 1,3,19	E 2104-330	C. Capacitor DD306-63F104Z12	3	
2	E 2010-010	El. Capacitor 16MR-100	1	
4	E 2047-640	El. Capacitor 35MR-47	1	
5	E 2001-650	El. Capacitor 50MR-1	1	
6,102	E 2310-220	My. Capacitor DMY21H473K	2	
7	E 2000-020	El. Capacitor FSOH-473Z	1	
8,16,17	E 2147-060	C. Capacitor DD804-63B471K50	3	
9,10	E 2110-340	C. Capacitor DD107-63R101J50	2	
11,14	E 2110-270	C. Capacitor DD806-63F103Z50	3	
18				
12,13	E 2110-380	C. Capacitor DD804-63B102K50	3	
15				
20,101	E 2147-060	C. Capacitor DD804-63B471K50	2	
CP 1,5,8	E 2104-330	C. Capacitor DD306-63F104Z12	5	
10,12				
OSC	E 501-150	Crystal CSA7.37MT40	1	
L 1,2	E 4009-300	Coil SN-3-200	2	
BZ	E 7151-120	Buzzer MEB-12-5	1	

PARTS LIST**CONTROL BOARD ASSY : PARALLEL****CBM-710/720**

Ref. No.	Parts No.	Description	Q'ty	Remarks
DS 1	E 5103-350	Dip Switch KSD-8	1	
	E 4010-290	Heat Sink 50-0032	1	for TA 1
	S 3 x 8	Pan Head Screw M3 x 8	2	for TA 1
	N 3-1-N	Nut M3	2	for TA 1
CN 1	E 4800-915	Connector 5267-05A-X	1	
2	E 4800-895	Connector MRD-36SB-130	1	
4	E 4800-925	Connector 5267-17A-X	1	
5	E 4800-930	Connector 5267-09A-X	1	
6	E 4800-935	Connector 5267-07A-X	1	
7	E 4800-940	Connector 5268-02A-X	1	
8	E 4800-945	Connector 5267-04A-X	1	
9	E 4800-950	Connector 5267-03A-X	1	



Jump Wire Setting : PARALLEL

	with Back Up (B)	without Back Up (N)
Jumper 1	Open	C-N Short
Jumper 2	C-B Short	C-N Short

PARTS POSITION : CONTROL BOARD UNIT PARALLEL

PARTS LIST

7. Control Board Assy : RS422A

CBM-710/720

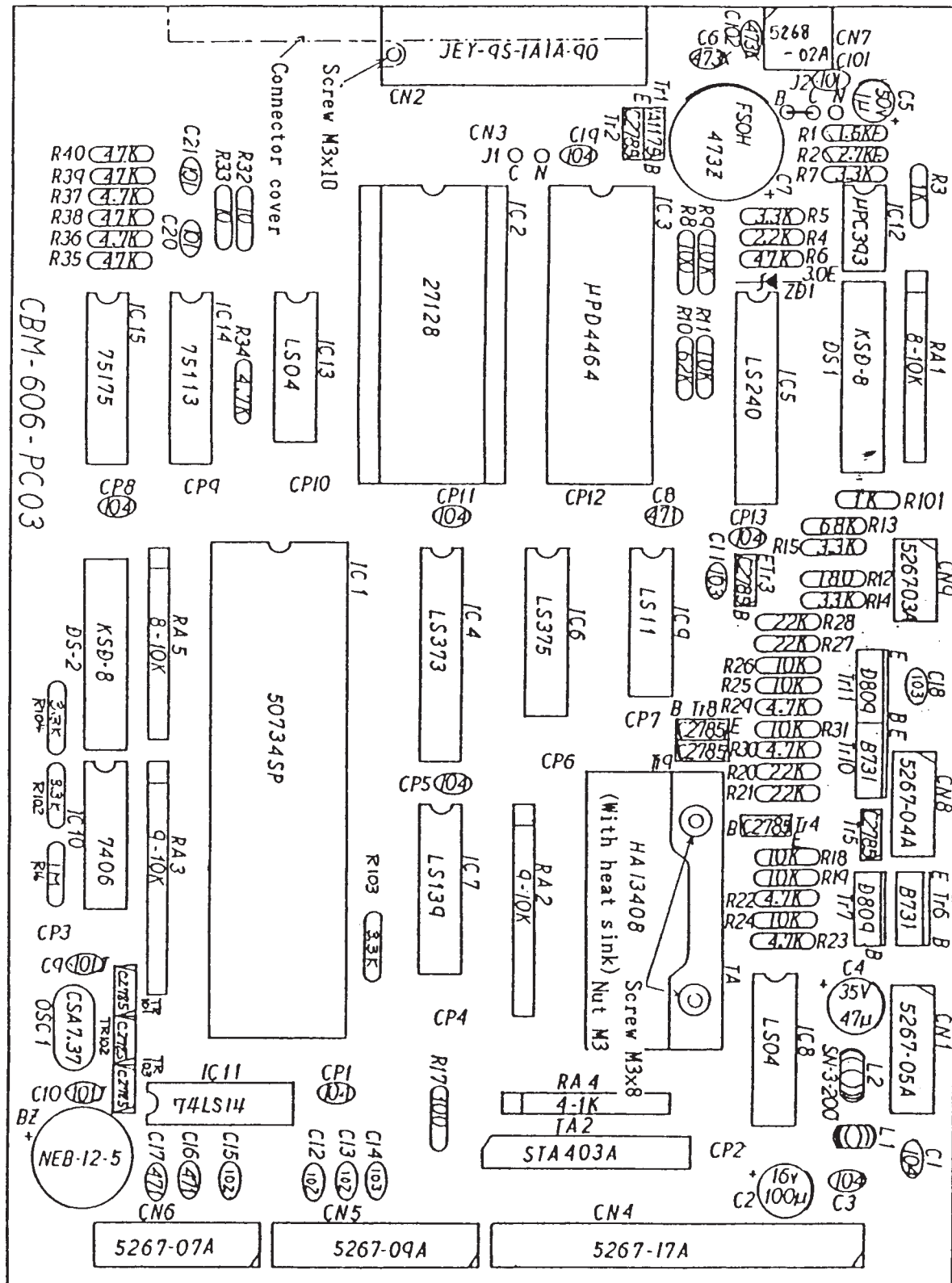
Ref. No.	Parts No.	Description	Q'ty	Remarks
IC	1	E 104-200	LSI (CPU) M50734SP	1
	2	E 107-140	LSI (PROM) M5L27128K	1
	3	E 104-220	LSI (RAM) uPD4464C-15L	1
	4	E 2010170	IC (TTL) SN74LS373N	1
	5	E 2010220	IC (TTL) SN74LS240N	1
	6	E 2010230	IC (TTL) SN74LS375N	1
	7	E 2010240	IC (TTL) SN74LS139N	1
8,13	E 2010250	IC (TTL) SN74LS04N	2	
	9	E 2010260	IC (TTL) SN74LS11N	1
	10	E 2010200	IC (TTL) SN7406N	1
	11	E 2010270	IC (TTL) SN74LS14N	1
	12	E 202-610	IC uPC393C	1
	14	E 202-620	IC (TTL) SN75113	1
	15	E 202-630	IC (TTL) SN75175	1
TA	1	E 390-100	Tr. Array HA13408	1
	2	E 390-120	Tr. Array STA403A	1
TR	1	E 319-117	Transistor 2SA1175HF	1
	2-5	E 359-278	Transistor 2SC2785HF	9
8,9				
101-103				
6,10	E 327-030	Transistor 2SB731L	2	
7,11	E 360-020	Transistor 2SD809(1)L	2	
ZD	E 403-060	Zener Diode RD3. 0EL1	1	
RA	1,5	E 3103-140	Re. Array SR-8RA-10K	2
	2,3	E 3103-170	Re. Array SR-9RA-10K	2
	4	E 3013-090	Re. Array SR-4RB-1K	1
R	1	E 3152-100	Resistor 1/4W 1.5K F	1
	2	E 3272-090	Resistor 1/4W 2.7K F	1
3,101	E 3102-041	Resistor 1/4W 1K J	2	
	4	E 3222-041	Resistor 1/4W 2.2K J	1
5,7,15	E 3332-041	Resistor 1/4W 3.3K J	6	
102-104				

PARTS LIST**CONTROL BOARD ASSY : RS422A****CBM-710/720**

Ref. No.	Parts No.	Description	Q'ty	Remarks
R 6,35 38-40	E 3473-041	Resistor 1/4W 47K J	5	
8,17	E 3101-041	Resistor 1/4W 100 J	2	
9,11 18,19 24-26 31	E 3103-041	Resistor 1/4W 10K J	8	
10	E 3623-041	Resistor 1/4W 62K J	1	
12	E 3181-041	Resistor 1/4W 180 J	1	
13	E 3683-041	Resistor 1/4W 68K J	1	
14	E 3333-041	Resistor 1/4W 33K J	1	
16	E 3105-041	Resistor 1/4W 1M J	1	
20,21 27,28	E 3223-041	Resistor 1/4W 22K J	4	
22,23 29,30 34,36 37	E 3472-041	Resistor 1/4W 4.7K J	7	
32,33	E 3100-041	Resistor 1/4W 10 J	2	
C 1,3,19	E 2104-330	C. Capacitor DD306-63F104Z12	3	
2	E 2010-010	El. Capacitor 16MR-100	1	
4	E 2047-640	El. Capacitor 35MR-47	1	
5	E 2001-650	El. Capacitor 50MR-1	1	
6,102	E 2310-220	My. Capacitor DMY21H473K	2	
7	E 2000-020	El. Capacitor FSOH-473Z	1	
8,16 17	E 2147-060	C. Capacitor DD804-63B471K50	3	
9,10	E 2110-340	C. Capacitor DD107-63R101J50	2	
11,14 18	E 2110-270	C. Capacitor DD806-63F103Z50	3	
12,13 15	E 2110-380	C. Capacitor DD804-63B102K50	3	
20,21 101	E 2110-330	C. Capacitor DD804-63B101K50	3	
CP 1,5,8 11,13	E 2110-300	C. Capacitor DD306-63F104Z12	5	

PARTS LIST**Control Board Assy : RS422A****CBM-710/720**

Ref. No.	Parts No.	Description	Q'ty	Remarks
OSC 1	E 501-150	Crystal CSA7.37MT40	1	
L 1,2	E 4009-300	Coil SN-3-200	2	
BZ	E 7151-120	Buzzer MEB-12-5	1	
DS 1,2	E 5103-350	Dip Switch KSD-8	2	
	E 4010-290	Heat Sink 50-0032	1	for TA 1
	S 3 x 8	Pan Head Screw M3 x 8	2	for TA 1
	N 3-1-N	Nut M3	2	for TA 1
CN 1	E 4800-915	Connector 5267-05A-X	1	
2	E 4800-955	Connector JEY9S-1A1A-90	1	
4	E 4800-925	Connector 5267-17A-X	1	
5	E 4800-930	Connector 5267-09A-X	1	
6	E 4800-935	Connector 5267-07A-X	1	
7	E 4800-940	Connector 5268-02A-X	1	
8	E 4800-945	Connector 5267-04A-X	1	
9	E 4800-950	Connector 5267-03A-X	1	
	E 4024-050	Connector Cover	1	
	M 3 x 10	Pan Head Screw M3 x 10	1	



Jump Wire Setting : RS422A

	with Back Up (B)	without Back Up (N)
Jumper 1	Open	C-N Short
Jumper 2	C-B Short	C-N Short

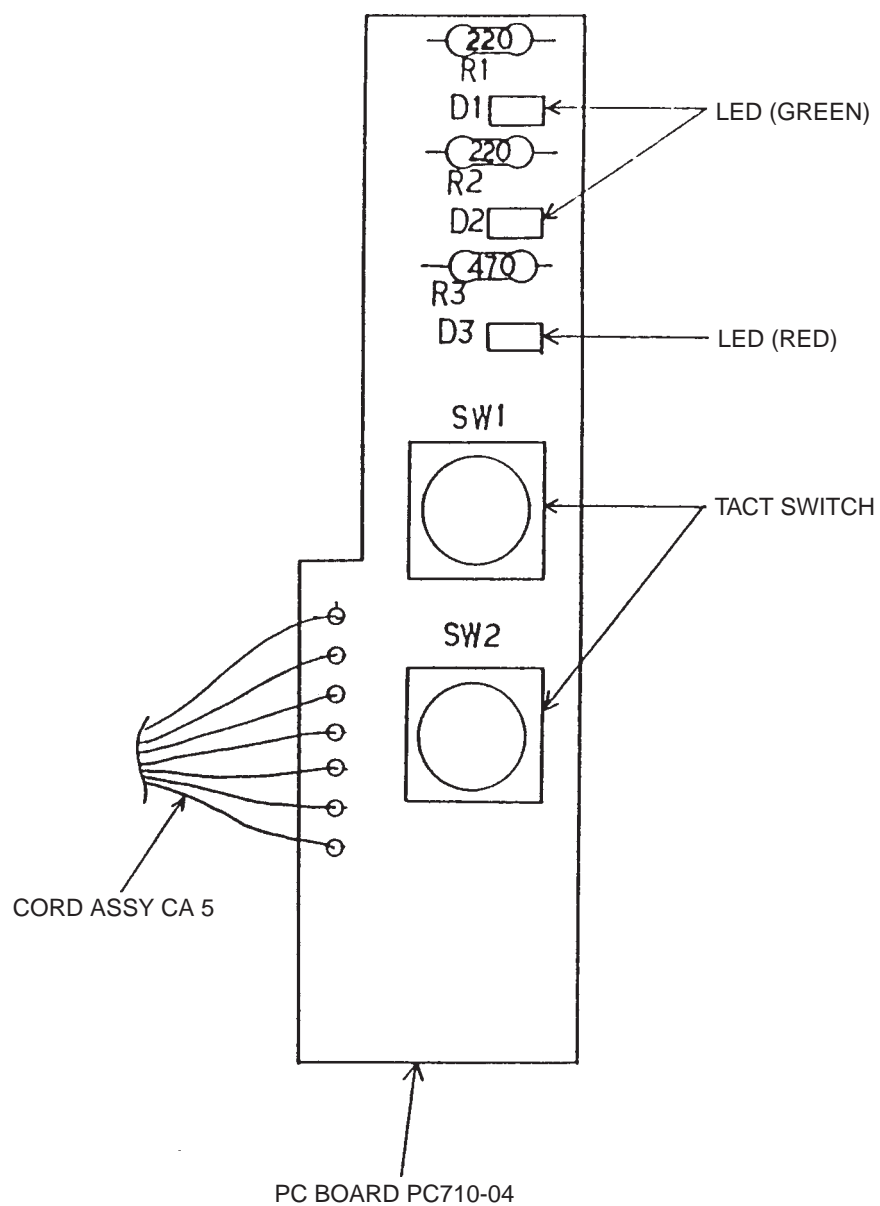
PARTS POSITION : CONTROL BOARD UNIT RS422A

PARTS LIST

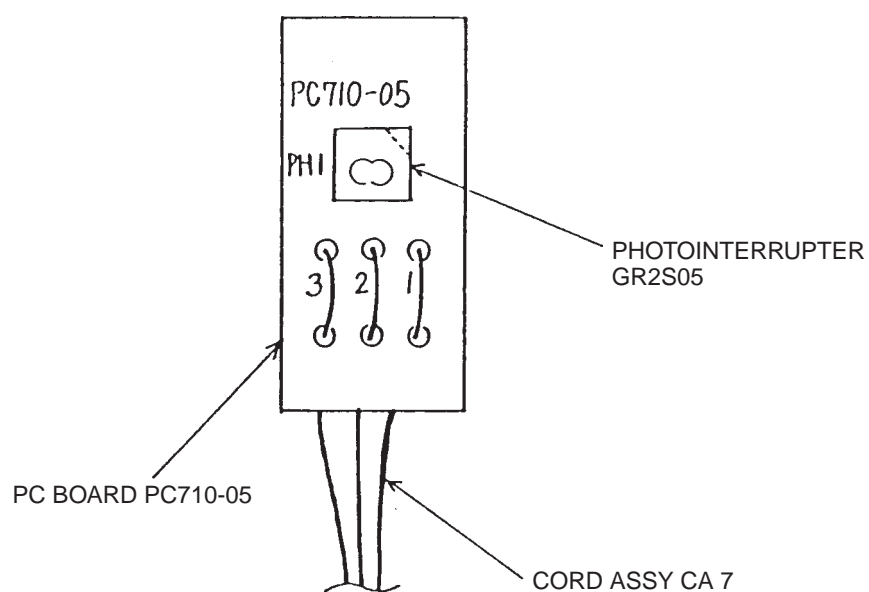
8. OPERATION PANEL UNIT/PE DETECTOR UNIT/OPERATION PANEL JUNCTION UNIT

CBM-710/720

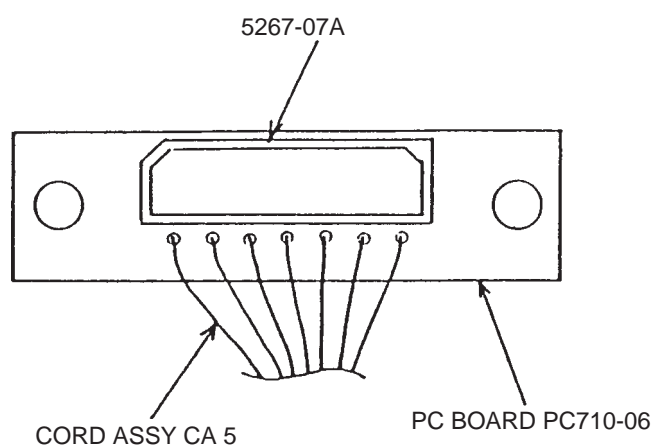
Ref. No.	Parts No.	Description	Q'ty	Remarks
** OPERATION PANEL UNIT **				
D 1,2	E 480-250	LED Lamp GL9NG22	2	
3	E 480-260	LED Lamp GL9PR22	1	
R 1,2	E 3221-041	Resistor 1/4W 220 J	2	
3	E 3471-041	Resistor 1/4W 470 J	1	
SW 1,2	E 5102-410	Tact Switch SKH-KAA	2	
CA 5	E 4800-960	Cord assy CA 5	1	
** PE DETECTOR UNIT**				
PH 1	E 4000-520	P.E. PCB Assy	1	
	E 391-090	Photointerrupter GP2S05	1	
	E 6650-040	PE Holder	1	
CA 7	E 48000010	Cord Assy CA 7	1	
** OPERATION PANEL JUNCTION UNIT **				
	E 4000-530	O.P. PCB Assy	1	
CN 12	E 4800-935	Connector 5267-07A-X	1	
CA 5	E 4800-960	Cord assy CA 5	1	



PARTS POSITION : OPERATION PANEL UNIT



PARTS POSITION : PE DETECTOR UNIT



OP Junction Block

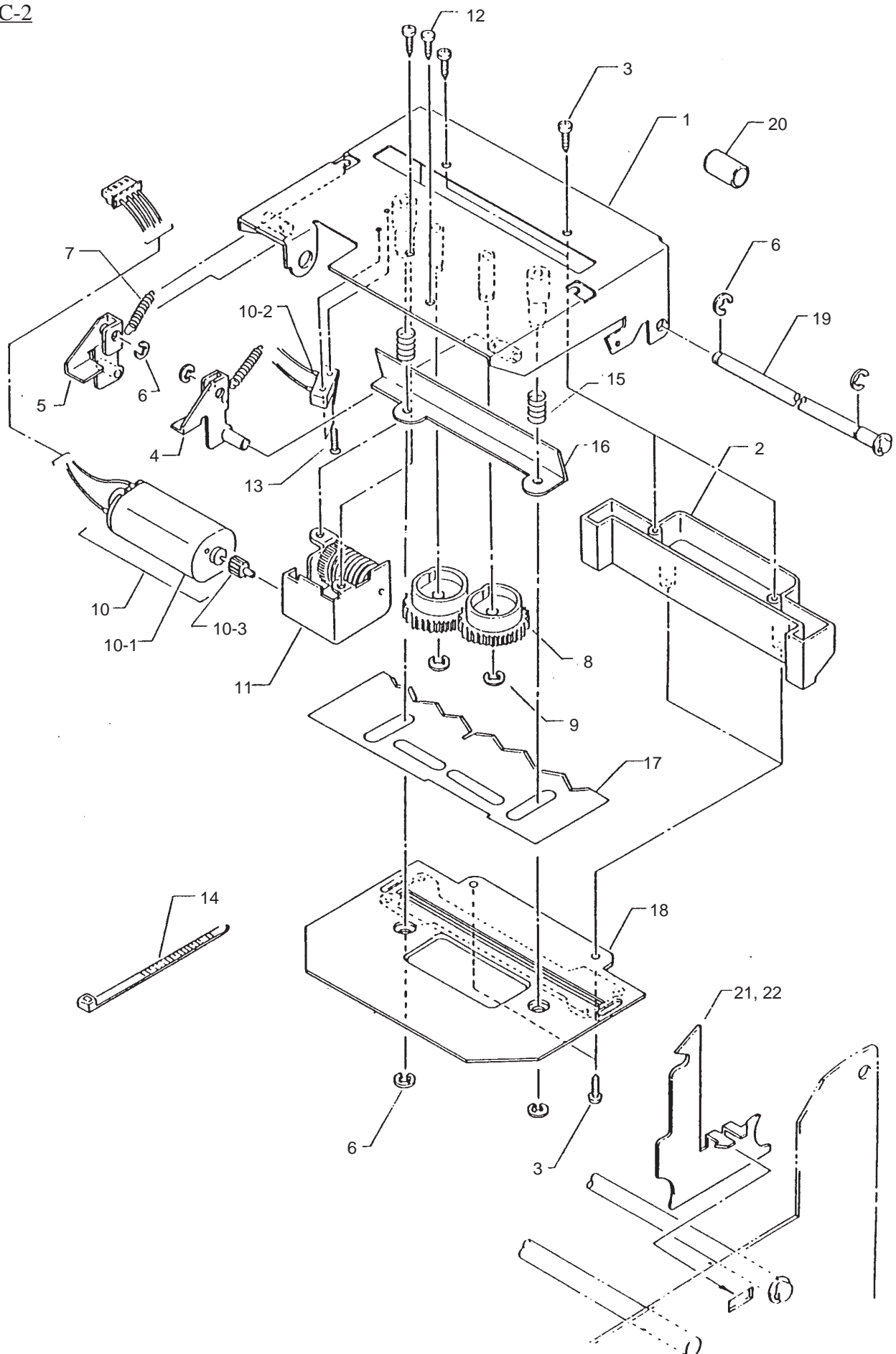
PARTS LIST

9. Auto Cutter

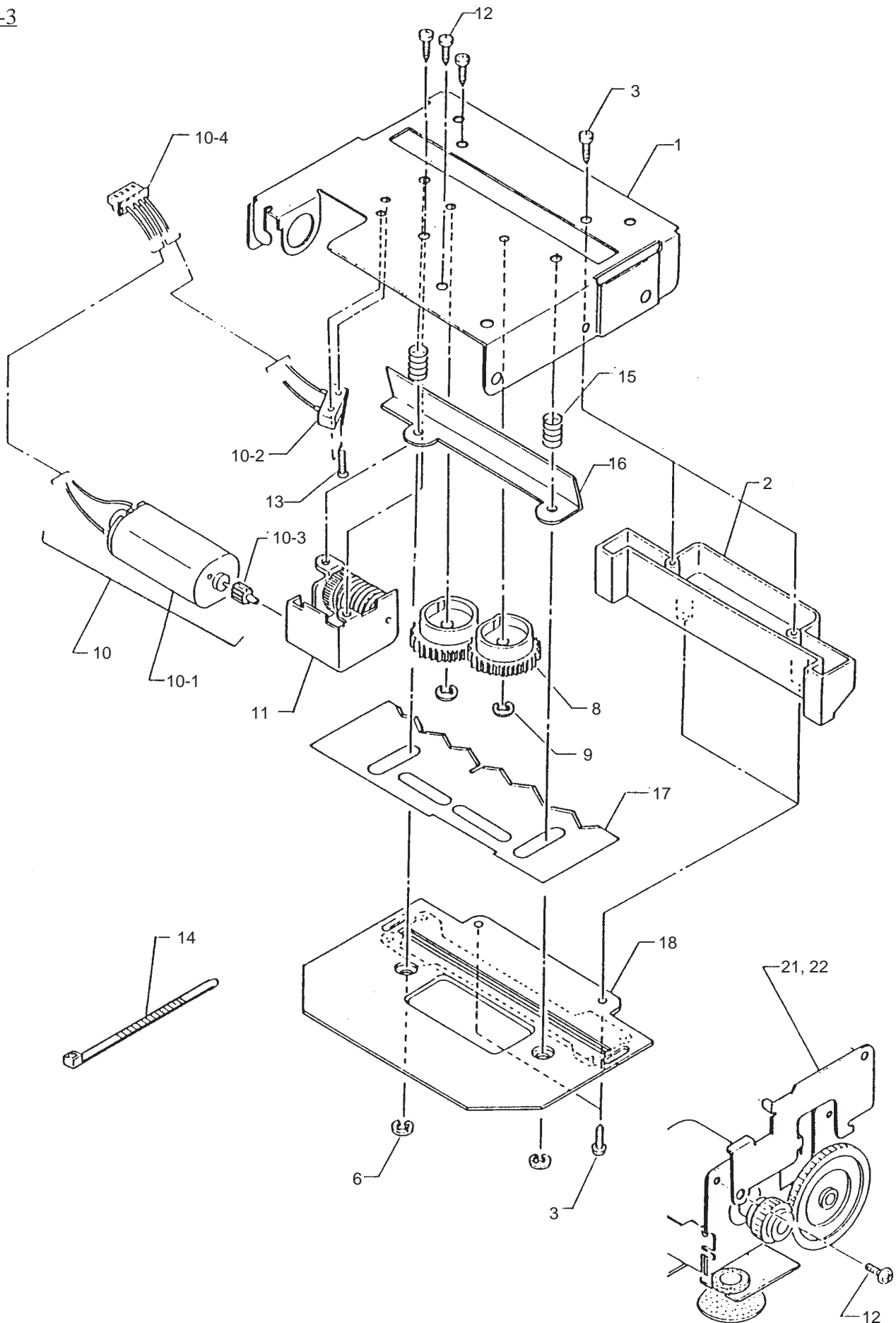
AC-2/AC-3

Ref. No.	Parts No.	Description	Q'ty		Remarks
			AC-2	AC-3	
1	E 8010-010	Frame Assy (2)	1		
	E 8010-020	Frame Assy (3)		1	
2	E 8011-010	Paper Guid (2)	1	1	
3	S 2.6 x 8	Pan Head Screw M2.6 x 8	4	4	
4	E 8012-010	Lock Lever Sssy R	1		
5	E 8013-010	Lock Lever Assy L	1		
6	E 3	E Ring 3	7	2	
7	E 8014-010	Lock Lever Spring	2		
8	E 8015-010	Cutter Gear Assy	2	2	
9	E 2.5	E Ring 2.5	2	2	
10	E 8016-010	Motor Assy (DC24V, 50mA)	1		DC 24V
	E 8016-020	Motor Assy (DC12V, 65mA)		1	DC 12V
10-1	E 8017-010	Motor (DH515, DC24v, 50mA)	1		
	E 8017-020	Motor (DH416, DC12V, 65mA)		1	
10-2	E 8018-010	Limit Switch D2F-01FL	1	1	
10-3	E 8019-010	Motor Gear	1	1	
10-4	E 48000070	Cord Assy (25-0080)	1	1	
11	E 8020-010	Worm Gear Assy	1	1	
12	S 2.6 x 5-s	Pan Head Screw M2.5 x 6	2	4	
13	SW 2 x 8	Pan Head Screw/W M2 x 8	2	2	
14	E 4031-060	Wire Band T18S	1	1	
15	E 8021-010	Blade Spring	2	2	
16	E 8022-010	Guide Plate	1	1	
17	E 8030-010	Blade	1	1	
18	E 8023-010	Blade Cover	1	1	
19	E 8024-010	Frame Shift	1		
	E 8030-020	Blade (Full Cut Type)	1		
20	E 8025-010	Spacer	2		
21	E 8026-010	Hook R	1		
	E 8027-010	Bracket R		1	
22	E 8026-020	Hook L	1		
	E 8027-020	Bracket L		1	

AC-2



AC-3



PARTS LIST**10. Winder****AW-2**

Ref. No.	Parts No.	Description	Q'ty	Remarks
1	E 8500-010	AW Frame Assy	1	
2	E 8510-010	Motor Assy (DC24V, 50mA)	1	
2-1	E 8017-010	Motor (DH515, DC24V, 50mA)	1	
-2	E 8512-010	Motor Gear	1	
-3	E 8513-010	Cord Assy (25-0082)	1	
3	E 8514-010	Motor Cover	1	
6	E 8515-010	W Gear	1	
7	E 8516-010	Idle Gear	1	
8	E 4	E Ring	2	
9	E 8520-010	AW Cover	1	
10	E 8521-010	AW Top Cover	1	
11	E 8522-010	Bottom Plate	1	
12	E 8530-010	Rear Shaft	1	
13	E 8531-010	Rear Frange	1	
14	E 8532-010	Paper Guide	1	
15	S 3 X 6-S	Pan Head Screw M3 x 6	7	
16	E 4031-060	Wire Band T18S	1	

AW-2

